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NOVEMBER 12, 1951
VOLUME 40, No. 23

AMERICAN DYESTUFF REPORTER

DEVOTED TO TEXTILE CHEMISTRY • BLEACHING • DYEING • PRINTING • FINISHING

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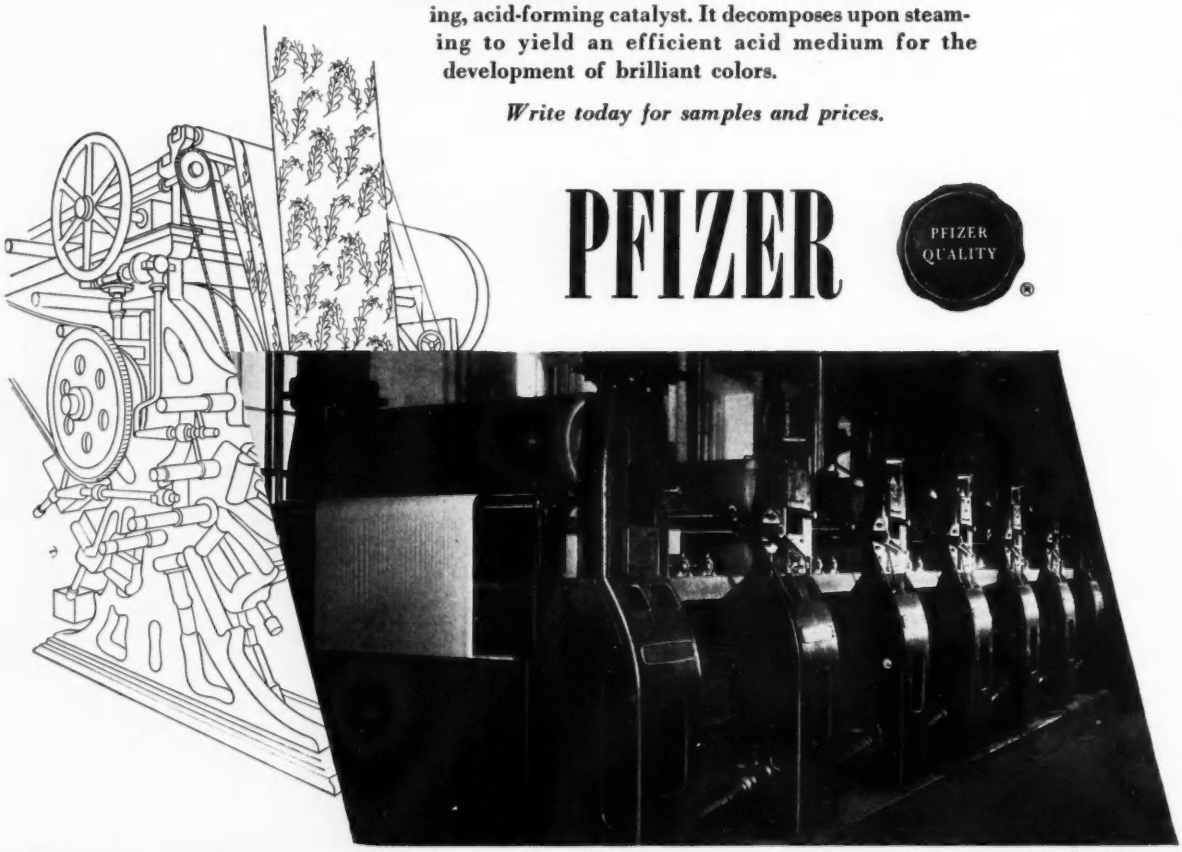

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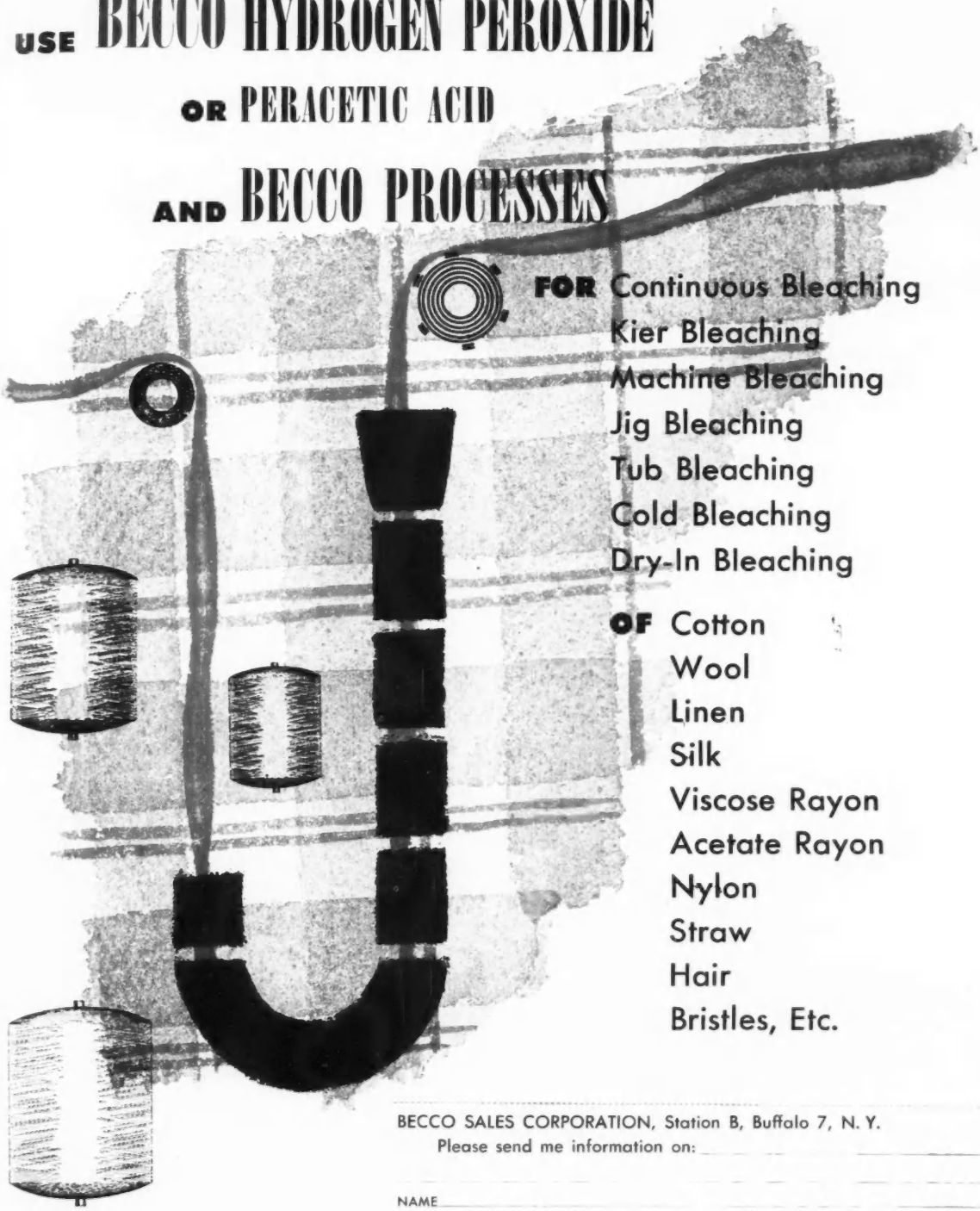

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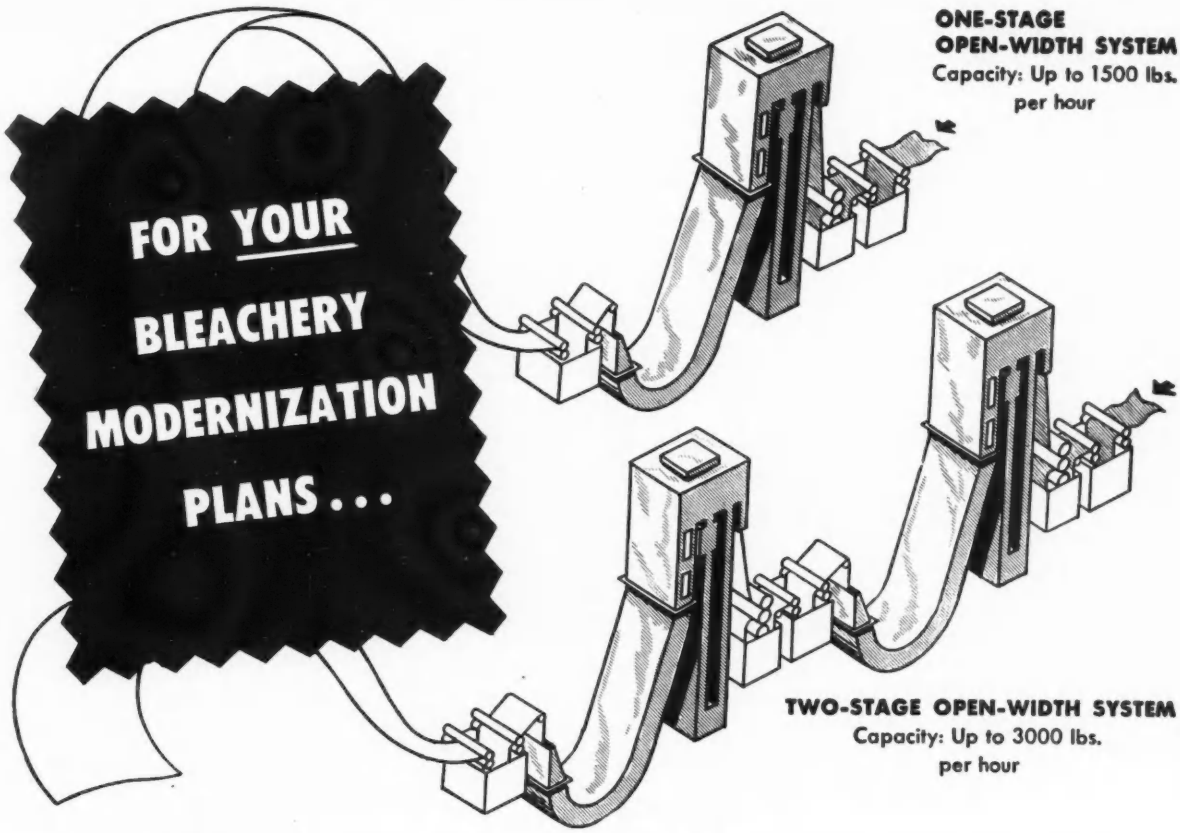

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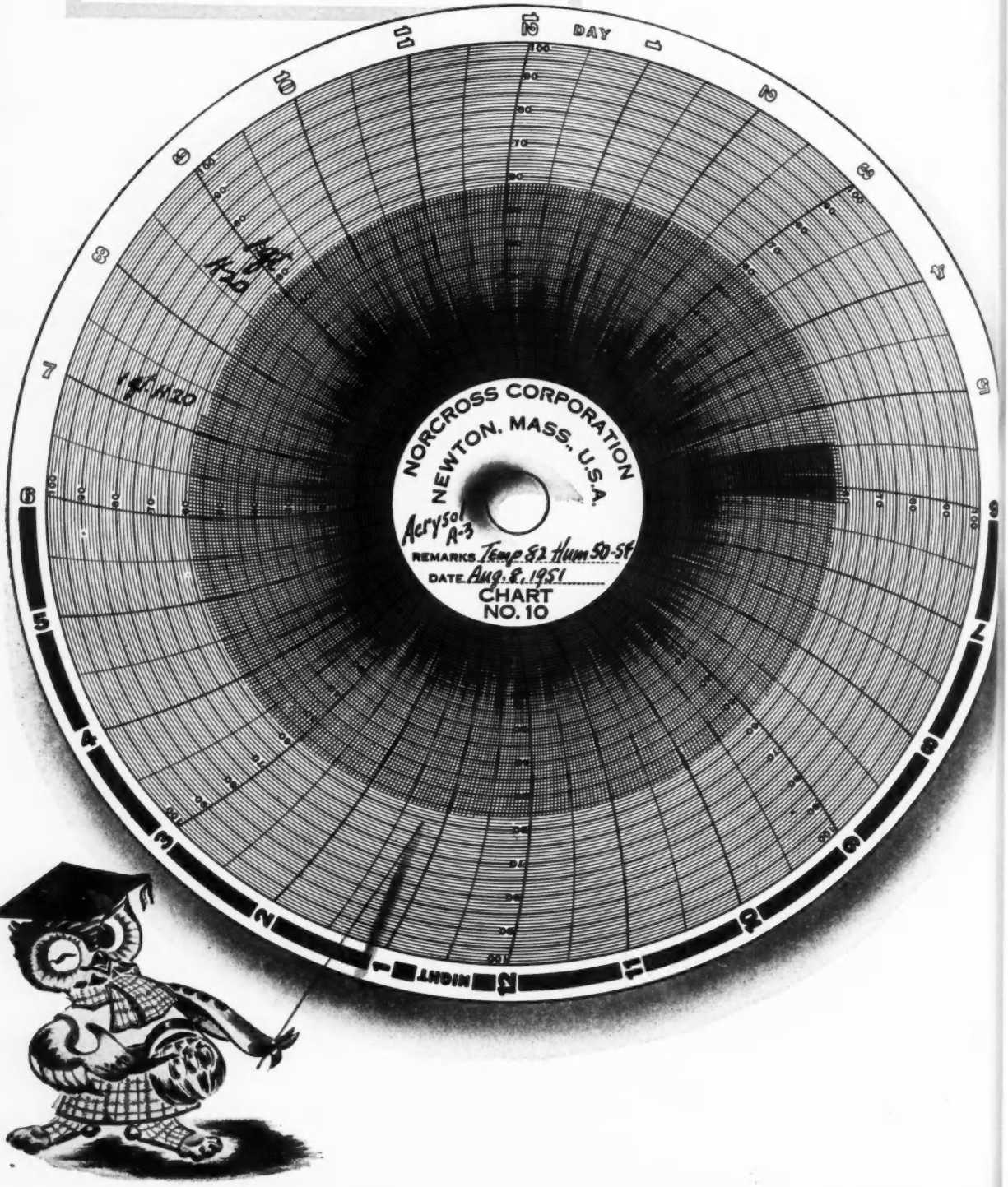

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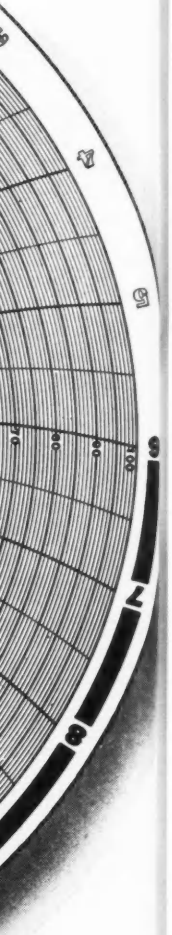

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uniform viscosity and application

high adhesion—will not rub off or shed

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easily removed in scouring

This is a reproduction of a chart from a Norcross automatic recording viscometer, which measures the viscosity of a solution at three minute intervals. This chart, which covers a period of twenty-four hours, demonstrates the remarkable uniformity of ACRYSOL A-3 sizing solutions, a major factor in the production of uniformly sized tricot yarns. At certain points indicated on the chart, water was added to replace that lost by evaporation. Thus, the viscosity measurement offers a convenient control of the size concentration.

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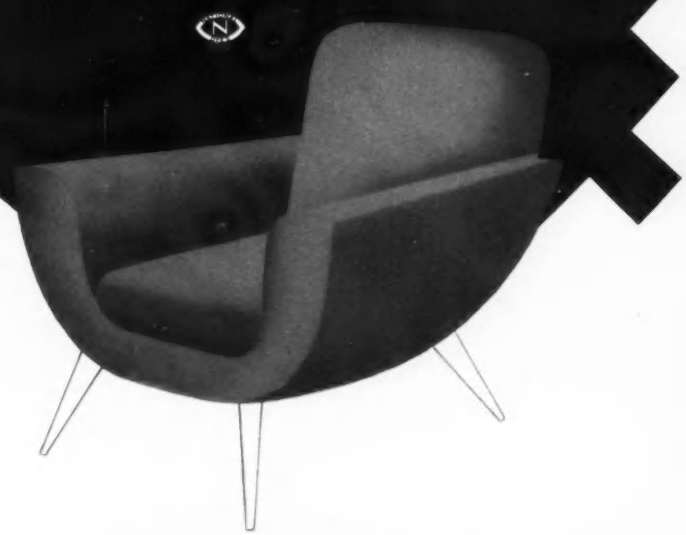

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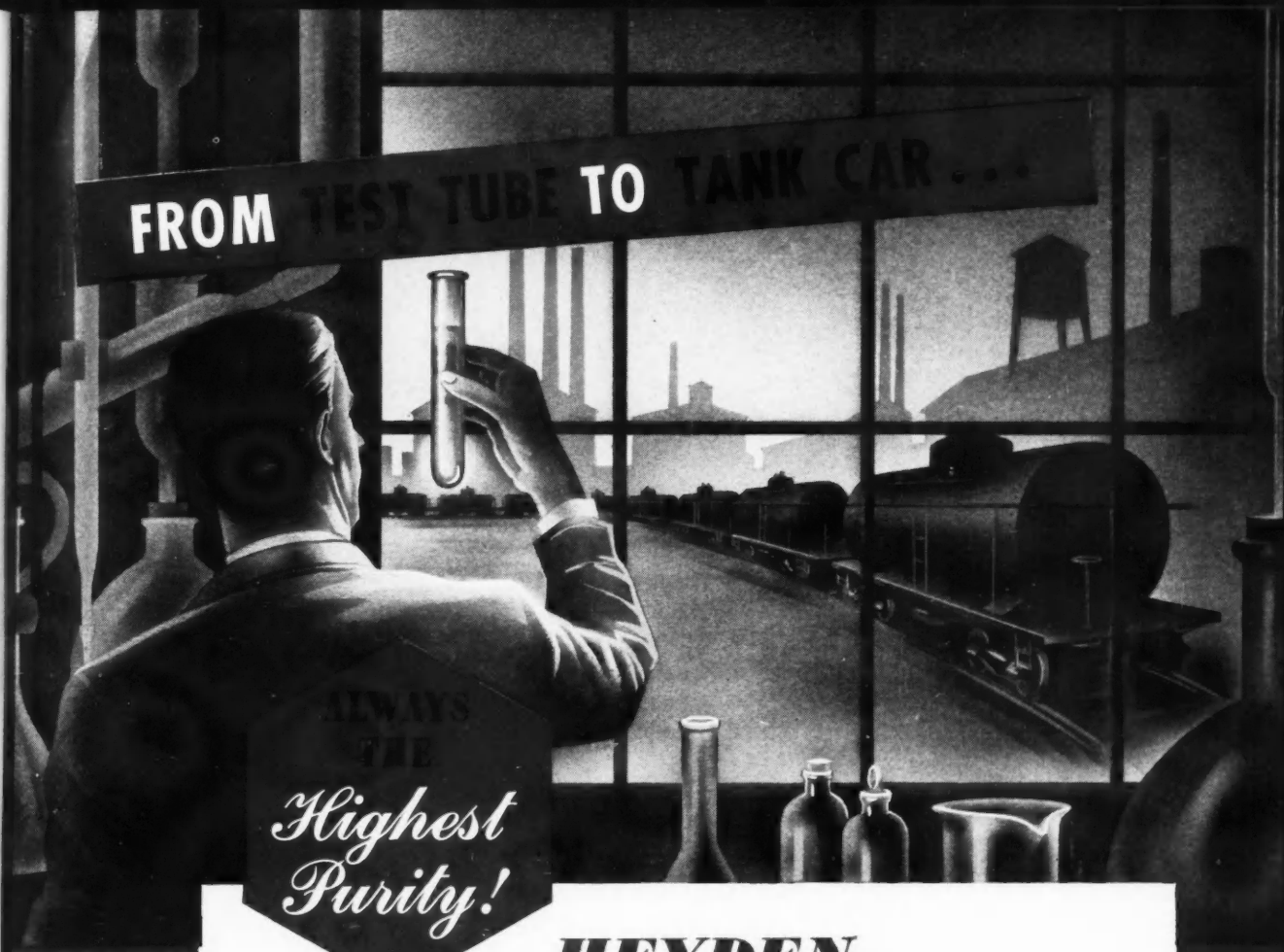

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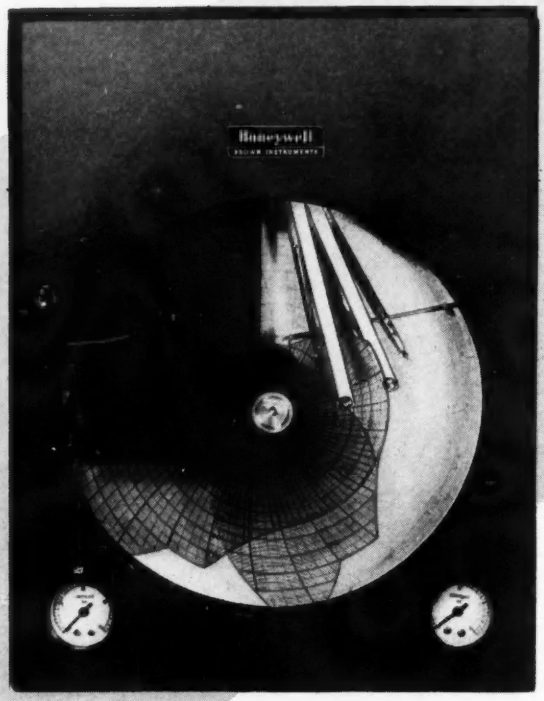

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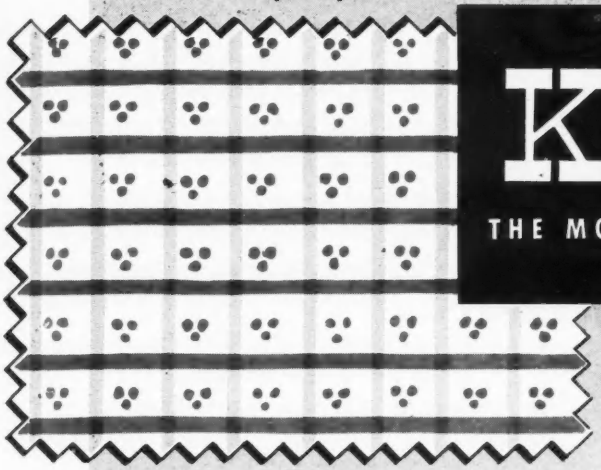

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ALGOSOLS are water soluble esters of vat dyes. They produce the same brilliant shades and have the same fastness properties as the parent vat dyestuffs from which they are derived. On cotton and rayon they are more level dyeing and have better penetration than ordinary vats. Prints are smoother and clearer than normally applied vat dyestuffs. On wool Algosols have superior light and wash fastness without impairment to the quality of the wool. The method of applying Algosols is simple and inexpensive.

COTTON

Mercerized cotton piece goods of constructions otherwise difficult to color, have outstanding smoothness and penetration when dyed with Algosols. The shades of colored yarns used for cross-dyed effects in striped shirtings, etc. are not affected when over-dyed with Algosols. Mercerized and other types of cotton yarn dyed in package dyeing equipment are uniform, evenly colored from outside to center and free from crossovers.

WOOL

Suitings dyed with Algosols have excellent fastness properties even in light shades. Blankets and knitting yarns have outstanding fastness to light and washing. Algosols are recommended for dyeing slubbing and yarns in circulating machines. Shrink-proofed wool dyed with Algosols has excellent fastness to light and repeated washings. Wool can be dyed with Algosols without impairment to the quality of the wool.

RAYON

Rayon piece goods composed of filament, spun rayon or filament-spun rayon yarn when dyed by the continuous method or on the jig have solid, clear shades and excellent fastness. Rayon skeins are easily dyed on the 'Cascade' type machine. Algosols are excellently suited for dyeing packages and cakes in pressure dyeing equipment.

PRINTING

In roller, screen and resist printing prints are smoother and colors clearer than the normally applied vat dyestuffs from which they are derived. Algosols have excellent light and wash fastness and do not crock. Blotch printed drapery fabrics have smooth grounds with excellent fastness to light and washing. Algosols are ideal companion colors for Rapidogens and Fast Color Salts.

MIXED FIBERS

Suitings and dress goods of spun rayon and wool blends dyed in solid shades meet all fastness requirements. Special effects can be obtained on cotton-wool and rayon-wool mixtures by dyeing the wool and leaving the cellulosic fibers undyed or on viscose-acetate blends the viscose can be dyed fast color and the acetate tinted to yield two-tone effects.

COST

The simplicity of application, saving in time, lower cost of chemicals, superior dyeing and printing results offset any increase in dye cost over ordinary vats in light and medium shades. Not infrequently Algosols prove cheaper in light shades.

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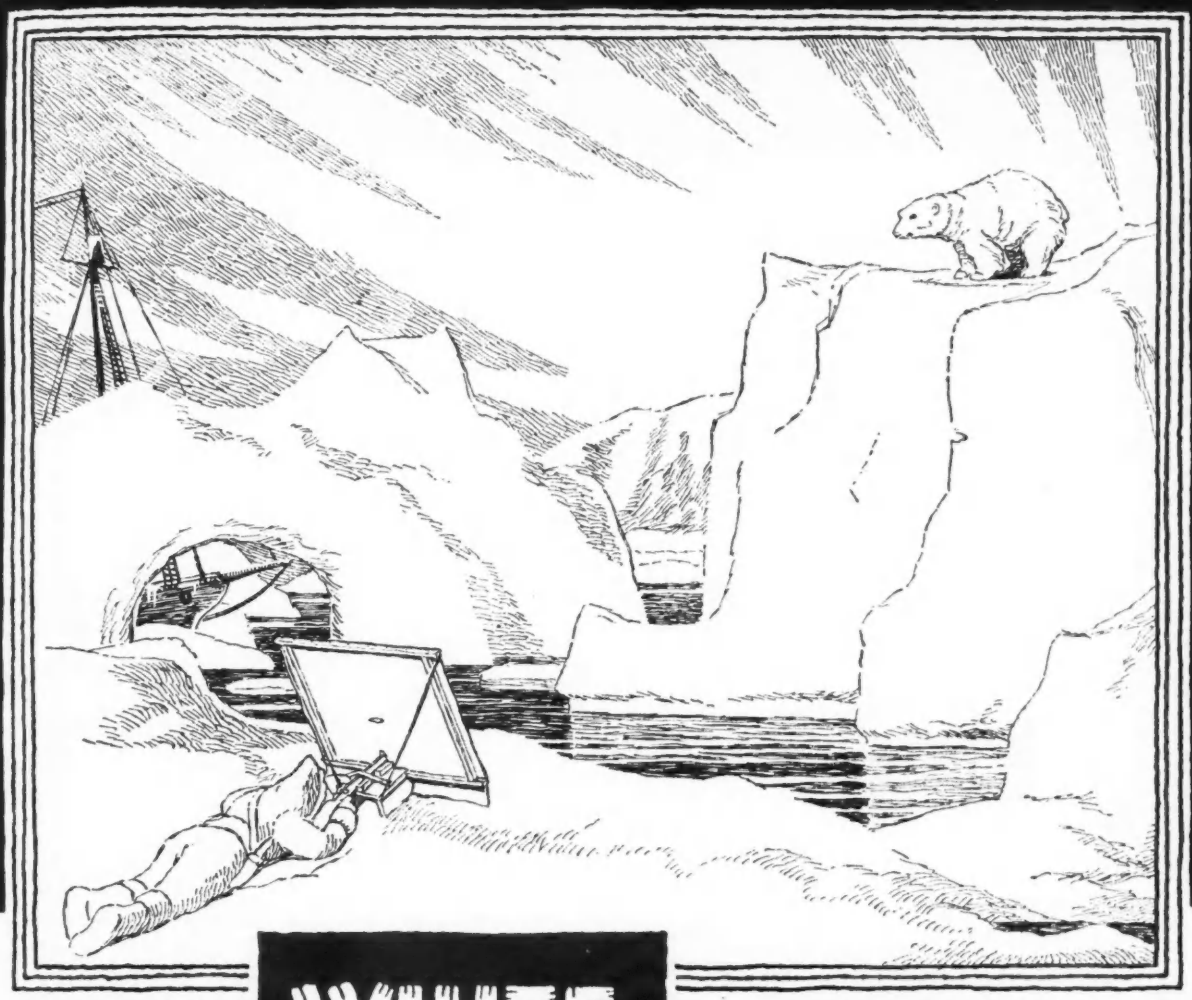

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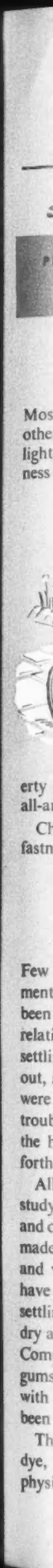

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Calcofast Wool Dyes overcome many of the obstacles presented by these other types of dyes. A complete range of shades with good brightness can be obtained, while maintaining at the same time excellent standards in light, washing, perspiration and other important fastnesses.

New dyeing techniques have been developed by Calco so that the Calcofast Wool Dyes can be applied with a minimum amount of acid and at the same time produce solid level shades on either carbonized or uncarbonized wool stock, yarn or piece goods.

Calcofast Wool Dyes offer many advantages and should be investigated by every wool dyer. Ask your Calco Representative for information and samples.

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Use of Sodium Nitrite in Vat Dye Baths for Yarn

Over a year of practical experience has shown that the addition of sodium nitrite to the dye bath is beneficial in many application processes for vat dyeing. This method is widely used for dyeing packages of yarn with dyes such as Calcoloid* Blue BLD Double Powder, at temperatures of 180° F and 190° F, to secure superior penetration and levelness. Another useful application of sodium nitrite is in dyeing long chain warps. Even at normal dyeing temperatures, the sodium leuco compound of many vat dyes is unstable when subjected to prolonged reduction conditions, and this effect is counteracted by the addition of sodium nitrite. In certain cases, the use of sodium nitrite and higher-than-normal temperatures improves the penetration and levelness of long chain warp dyeings. The addition of sodium nitrite to the dye bath is also useful in applying certain vat dyes on the beck.

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Vat Dyes For Printing

Few people realize the many advancements and improvements which have been made in the vat printing pastes. A relatively short time ago problems of settling, poor printing properties, drying out, improper fixation and many others were prevalent. Even though they were troublesome, they were tolerated with the hope that improvements would be forthcoming.

All these problems have been under study for a considerable period of time, and one by one, improvements have been made which have reduced the troubles and variables in the print shop. Pastes have been developed which are non-settling, free-flowing, and which do not dry and flake on the sides of the drums. Compatibility with the average printing gums has been studied, and products with the best working properties have been developed.

The problems are not simple. Each dye, being of a different chemical and physical nature from the other, may not respond to the same treatments. Changes in the types of printing gums used by the printer further complicate the problem.

Few printers would now even consider using the vat printing types which were offered ten to fifteen years ago. Production and economy are too important.

Calco has pioneered in the development of better vat dyes for printing, processed to give best all-around performance. An excellent example of improvements incorporated in superior dyes is Calco's line of Hydron printing vats, especially the pinks, scarlets and oranges listed below.

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Calcosol Printing Scarlet 2GW Paste
Calcosol Printing Orange RYW Paste

Your Calco Representative will be glad to furnish further information and samples upon request concerning these and the many other Calco printing vat dyes.

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For the Textile Bookshelf

Revision—Descriptive Index of Calco Technical Bulletins (Calco Technical Bulletin No. 761-A, New Second Edition). Abstracts all bulletins published to date; helpful cross-index to select bulletins pertaining to special problems.

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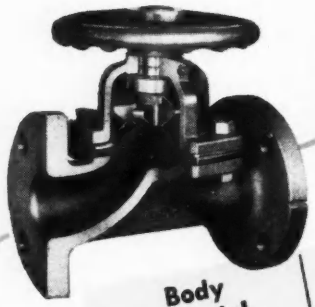

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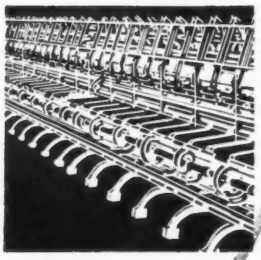

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NOVEMBER 12, 1951
VOLUME 40 NUMBER 23

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NOVEMBER 12, 1951

30th CONVENTION BREAKS SEVERAL ATTENDANCE RECORDS

THE 30th Annual Meeting, proclaimed by many as the "biggest and best," served to emphasize the AATCC's continued growth in stature and prestige with attendance figures at the three-day affair approaching 5,000. Approximately 2,000 registered for the majority of the events and 2,700 viewed the exhibits, all held at the Hotel Statler, New York, N Y, Oct 17-19, 1951. First-day attendance was about 2,000, a new record.

The Mixed Fibers Luncheon and Symposium served as the impetus for attendance on the second day (Thursday), attracting more than 1,200 persons from all phases of the industry. Statler authorities believed it to be the largest industrial luncheon ever to be held in New York. A gathering of 950 at the Annual Banquet on Friday proved its ability to rival the drawing power of the Symposium.

Activities began in earnest on Wednesday morning, October 17 with the opening of the exhibits of 85 firms, which were generally keyed toward product or service applications on the new fibers in a large number of cases. The National Council gathered in the Keystone room for their 178th Meeting (also on Wednesday morning), where they took steps to establish a national convention management committee to obtain greater continuity between annual meetings. The admission of 161 new members through Council vote brings total membership to a figure just under 6700.

Wednesday afternoon activities centered around the Dyeing Group and Printing Group meetings, which were held simultaneously. They, along with the Auxiliaries and Testing Group and Finishing Group meetings on Friday morning, produced 18 technical papers.

More than 200 ladies who registered for the convention attended a cocktail party in the late afternoon at the Rainbow Room, Rockefeller Center, the opening event in a three-day program for lady guests. The program, headed by Dr Herman E Hager, also featured a chartered boat ride around Manhattan and other sightseeing trips (on Thursday); breakfast at B Altman's and a Luncheon and Fashion Show at the Hotel Pierre (on Friday).

Thursday morning saw the presentation of the first Student Papers to be presented before a National Convention. Following this, Dr Louis B Cook, chief of the Dyeing & Finishing Branch, Textile Division, National Production Authority, addressed a large group, assuring them that restrictions on sulfur-based chemicals should not seriously hamper operations in the textile industry.

Leonard S Little, presided over the Mixed Fibers Luncheon and Symposium, the dominant theme of which was the matching of textile production to end-use. J Spencer Love, Chairman of Burlington Mills and featured luncheon speaker presented the subject "From Wonder Fiber to Wonder Fabric—A Challenge to Management." Following Mr Love's address, a panel of experts from every sector of the trade sought to answer all questions propounded to Symposium Chairman J Robert Bonnar.

The Intersectional Contest on Friday afternoon saw the New York Section win top honors with their paper "The Measurement of Fabric Soiling." The Rhode Island Section offering, "The Continuous Dyeing of New Synthetic Fibers," won second prize. Third place went to the Philadelphia Section for their paper "Some Variables in Improving the Crease Recovery of Cotton Fabrics with Synthetic Resins." Other papers presented included those by the Mid-West, Northern New England, South Central and Southeastern Sections.

The Grand Ballroom, site of the Mixed Fiber Luncheon and Symposium the day previous, provided the setting for the Annual Banquet and Business Meeting, with Convention Co-Chairmen Paul J Luck and Charles W Dorn, presiding. Mr Luck after his introductory remarks, introduced National President C Norris Rabold, who delivered the President's Address. George S J White brought greetings from the

Paul J Luck, convention co-chairman and C Norris Rabold, president.

Textile Institute of Manchester, England, and George H Spencer, its president, a letter from whom he read. As chairman of the joint committee of the Textile Institute and the Society of Dyers and Colourists, Mr White presented Mr Rabold with an inscribed presentation copy of the "Review of Textile Progress." As an SDC Councilor, Mr White presented the AATCC library with a specially bound copy of the Photochemistry Symposium as a token of collaboration on the new Colour Index.

Mr Rabold announced the awarding of the Association's third honorary membership to Hugh Christison, regretfully noting that it had to be made in absentia due to the serious illness of the recipient.

Other events at the Business Meeting included the presentation of the Olney Award to Raymond W Jacoby (see page P698 of the October 29th issue), the first American Dyestuff Reporter Award to Mason Hayek and F C Chromey of du Pont, the Student Awards and the Intersectional Contest Awards. The American Dyestuff Reporter Award will be presented annually for the best paper on textile chemistry to appear in *Proceedings* columns during the year. Prof Percival Theel, Chairman of the Publications Committee, made the presentation to the winners for their article, "The Measurement of Static Electricity on Fabrics," which appeared in the March 5, 1951 issue.

Guest speaker for the evening was Harold G Hoffman, former governor of New Jersey. His colorful, fast-moving talk served as a fitting finale for a most successful Annual Meeting in all respects.

President C Norris Rabold Presents the 8th Olney Medal to Raymond W Jacoby.

Key Figures in the 1951 Olney Medal Presentation Pose with Their Wives. Standing: Dr W George Parks, Raymond W Jacoby, Elliot Broadbent. Seated (l to r): Mrs Parks, Mrs Jacoby, Mrs Broadbent.

SEATED AT THE HEAD TABLE DURING THE ANNUAL BANQUET AND BUSINESS MEETING (LEFT TO RIGHT):

Front Row:

Herman A Wilde, Chairman, Entertainment & Equipment Com
Samuel A Pettus, Chairman, Transportation Committee
George L Baxter, Co-Chairman, Symposium Luncheon Committ
Herman E Hager, Chairman, Ladies Committee
Kenneth H Bernard, Chairman, National Convention Committee
George H Schuler, Chairman, National Publicity Committee
Harold C Chapin, National Secretary
William A Holst, Chairman, Technical Program Committee
Carl Z Draves, Past President and Editor of Proceedings
Henry K Torpey, (CATCC) Guest
William D Appel, Past President
C A Muhr, Guest
Henry F Herrmann, Past President
C A Krähenbühl, Guest
P J Wood, Past President
George Haeberlein, Guest
Elvin H Kilheffer, Past President
Thomas R Smith, Past President
Henry L Young, Chairman, Exhibits Committee
William R Moorhouse, National Treasurer
Harold W Stiegler, National Director of Research
Albert E Sampson, Assistant Treasurer
Kenneth A Howry, Chairman, Publicity Committee
James J Marshall, Chairman, Entertainment Committee

Back Row:

Weldon G Helmus, Chairman, Banquet Committee
Norman A Johnson, Chairman, Printing Committee
John H Hennessey, Chairman, Registration & Finance Committee
Mason Hayek, Recipient, American Dyestuff Reporter Award
F C Chromey, Recipient, American Dyestuff Reporter Award
Percival Theel, National Chairman, Publications Committee
Elliot Broadbent, Olney Medal Speaker
J Robert Bonnar, National Vice President
Charles W Dorn, Convention Co-Chairman
Harold G Hoffman, Guest Speaker
C Norris Rabold, National President
Raymond W Jacoby, Olney Medalist
Paul J Luck, Convention Co-Chairman
George O Linberg, National Vice President
W George Parks, Olney Medal Speaker
Frank J O'Neil, National Chairman, Intersectional Contest
George S J White, SDC and Textile Institute
Leonard S Little, National Chairman, Research Committee
Charles F Donyes, Student Paper
R J Lynch, Student Paper
Patrick J Kennedy, Chairman, Student Contest

ANNUAL BANQUET & BUSINESS MEETING

OCTOBER 19, 1951

MIXED FIBERS AND SYMPOSIUM LUNCHEON

OCTOBER 18, 1951

THOSE SEATED AT THE HEAD TABLE DURING THE MIXED FIBERS LUNCHEON AND SYMPOSIUM INCLUDED (ALPHABETICALLY):

Robert Amory, vice president, Springs Mills

Ralph McIntyre, president, Jos Bancroft & Sons, Inc
Roger Millikin, president, Deering Millikin & Co, Inc
Sidney Moody, vice president, Calco Chemical Div
William R Moorhouse, National Aniline Div

THOSE SEATED AT THE HEAD TABLE DURING THE MIXED FIBERS LUNCHEON AND SYMPOSIUM INCLUDED (ALPHABETICALLY):

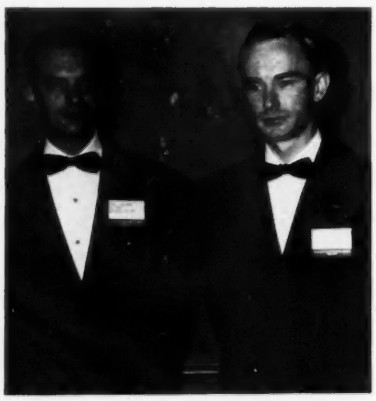
Robert Amory, vice president, Springs Mills
George L Armour, president, American Aniline Products
Alfred G Ashcroft, director of research, Alexander Smith & Sons Carpet Co
George L Baxter, assistant sales manager, Bradford Dyeing Assn
Ray Bell, president, Textile Merchants Assn
Victor Bermar, president, Onyx Oil & Chemical Co
William Berry, vice president, Riegel Textile Corp
Irene Blunt, secretary, National Federation of Textiles
Andrew E Buchannan, assistant general manager, Rayon Dept, du Pont Co
George S Buck, Jr, director of technical service, National Cotton Council
Harold C Chapin, national secretary, AATCC
Hugh M Comer, president, Avondale Mills, Inc
Richard A Conant, president, Wellington Sears Co
Lewis B Cook, chief, Dyeing & Finishing Branch, NPA
Marvin Cross, president, Greenwood Mills, Inc
Miles A Dahlen, director of sales, Fine Chemicals Div, du Pont Co
Harry Dalton, vice president, American Viscose Co
H J Daigneault, vice president, National Aniline Div, Allied Chemical & Dye Corp
John H Dillon, director of research, Textile Research Institute
Charles W Dorn, director of research, J C Penney & Co
Erwin Feldman, director counsel, National Assn of House Dress Manufacturers
William P Fickett, president, Textile Fabrics Assn
Comm Herman Fohlbush, "SC" USN Clothing Supply Office
James C Fortune, advertising and merchandising manager, American Bemberg Corp
Lyman B Freeze, president, Duplan Corp
Jules Goldstein, secretary, National Outerwear & Sportswear Assn
Lew Hahn, president emeritus, National Retail Dry Goods Assn
Ben Harris, dir, sales manager, Dan River Mills
Ernest H Hart, technical director, Richmond Piece Dye Works
George Heberlein, treasurer, Heberlein Co (Switzerland)
Weldon Helmus, vice president, Fair Lawn Finishing Co
Capt G L Herlihy, "SC" Commanding US Naval Supply Activities, New York
Henry F Herrmann, sales coordinator, General Dyestuff Corp
Kenneth A Howry, Daily News Record
Norman A Johnson, editor, American Dyestuff Reporter
Chester L Jones, assistant general sales manager, Textile Div, Monsanto Chemical Co
Archie Joslin, president, M Lowenstein & Sons Co
Arthur Kahn, president, A Kahn & Co
John Karrh, manager, Fiber Div, Virginia Carolina Chemical Corp
Stephen J Kennedy, director of research, Textile Office, QM General
William S Kilbourne, vice president, William Skinner & Sons
Dean Lewis, president, Silk & Rayon Printers & Dyers Assn
George O Linberg, vice president, Belle Chemical Co
Leonard S Little, consultant
J Spencer Love, chairman, Burlington Mills Corp
Paul J Luck, sales manager, New York, Calco Chemical Div, American Cyanamid Co
Harry B Marshall, president, Ciba Co, Inc
Ralph McIntyre, president, Jos Bancroft & Sons, Inc
Roger Millikin, president, Deering Millikin & Co, Inc
Sidney Moody, vice president, Calco Chemical Div
William R Moorhouse, National Aniline Div
Ernest Nathan, vice president, Sun Chemical Co
Douglas C Newman, director of sales, Dyestuff Div, du Pont Co
Matthew O'Brien, executive secretary, Rayon Yarn Producers Group
Winfred N Pardy, head, Testing Div, General Dyestuff Corp
Brackett Parsons, president, Pepperell Mfg Co
Arthur G Poor, Manager, Standard Bleaching & Printing Co
C Norris Rabold, The Erwin Mills, Inc
John M Reeves, president, Reeves Bros, Inc
Harry Reimer, editor, Daily News Record
Howard Richmond, vice president, Crompton Richmond Co
Walter Ross, president, J Rosenholtz & Co
A J Royce, president, Royce Chemical Co
Frederick C Scholler, president, Scholler Bros, Inc
Thomas R Smith, manager, Yarn Dye Dept, Wiscasset Mills Co
Capt W B Sutterland, Jr, Army Procurement Office
A M Tenney, president, A M Tenney Associates
James P Walker, vice president, Sandoz Chemical Co
Martin Weiner, president, Texstyle Corp
George S J White, chief colorist, Imperial Chemical Industries, Ltd (England)
Edwin Wilkinson, secretary, National Assn of Wool Manufacturers
Col Hobe S Wofford, chief, Industrial Mobilization, Army Procurement Agency

THE PANEL AT THE SYMPOSIUM CONSISTED OF THE FOLLOWING:

Ira Altman, partner, Cavalcade Fabrics
William D Appel, chief, Textile Section, National Bureau of Standards
David Askemase, Rose Bros
Ruth Ayres, managing director, National Consumer-Retailer Council
Fred Bantz, vice president in charge of merchandising, J C Penney Co
Ernest H Benzing, technical director, Bemberg Corp
Frederic Bonnet, American Viscose Corp
Robert Burns, Celanese Corp of America
John N Dalton, chemical director, Pacific Mills
Julius B Goldberg, research director, J P Stevens & Co
John Goldsmith, vice president, Hess Goldsmith Co
Otto J Haufe, Turner Halsey Co
George Hotte, technical director, A M Tenney Associates, Inc
Waldemar Kuenzel, executive manager, Fabric Development Dept, Deering, Millikin & Co, Inc
Richard Kropf, vice president of research, Belding Heminway
Eugene Lutz, head, Textile Development, Burlington Mills Corp
Vivian McCollom, president, Allentown Converting Co
Paul L Meunier, manager, sales development, Dyestuffs Div, du Pont Co
Joseph B Quig, manager, sales development, Fibers Dept, du Pont Co
E W Rugeley, technical director, Union Carbide & Carbon Chemical Co
Harold W Stiegler, director of research, AATCC
Fred L Young, consultant to Virginia Carolina Chemical Co

Mrs. George O Linberg; J H Hennessey, Registration and Finance Committee Chairman; George O Linberg, National Vice President

Raymond W Jacoby, 8th Olney Medalist (left) and former New Jersey Governor Harold G Hoffman discuss affairs other than state. Mr Hoffman was Guest Speaker at the Annual Banquet.



1951 American Dyestuff Reporter Award Winners Fred C Chromey (left) and Mason Hayek.

Mrs Paul Luck, Mrs C Norris Rabold, Mrs Walter F Fancourt and Mrs James J Marshall.

New York Section——

AATCC PARTICIPATION IN EUROPEAN TEXTILE CONFERENCES IN 1951*

C Norris Rabold

Leonard S Little

William D Appel

PART I—RELATIONSHIPS AND RESPONSIBILITIES DEVELOPED

C NORRIS RABOLD

AATCC President

TONIGHT, I should like to tell you a bit about my trip overseas. First, I have a few general remarks, and then I wish to mention the Textile Institute Conference and our meeting with the Society of Dyers and Colourists. As you know, Mr Appel, Mr Little and I were together at the various meetings and conferences in which we, as American Association of Textile Chemists and Colorists representatives, had specific business. The main reasons for our going abroad were to attend the Textile Institute Conference, to meet with the Society of Dyers and Colourists on matters having to do with the Colour Index, and, last, to represent the United States and this Association at the International Standards Organization Conference.

The Textile Institute Conference was held in Brighton, England, during the week of May 20th. The week following we met with the Society of Dyers and Colourists in Manchester and Bradford. On June 3rd, the three of us went to Bournemouth for the International Standards Organization Conference held June 3rd-9th. I am most grateful to Mr Appel and Mr Little for their contributions to our joint efforts at all our meetings. We can well be proud to have delegates such as these gentlemen, representing our Association at the conferences we had in England and later, on the continent.

Papers given at the Institute were published before the conference so that each member of the Institute would have an opportunity to read and comment upon them at the meeting. Preprints were available to out-of-country members upon registration. They also had the opportunity to study any paper before the author discussed it during the technical sessions. Discussions of papers at technical sessions were confined to 20 minutes, with an opportunity for questions from the floor thereafter. This idea of preprinting papers differs from our procedure in the United States. Here the author customarily delivers the paper either as written or presents a condensed version. There is no opportunity, by this method, for people to read and question a paper before it is presented. At the Institute Conference, the author briefly reviewed his paper, or brought in subject material that was not possible to incorporate in the printed write-up. If he had received questions before presentation, he might also discuss these in his remarks. This method of presenting papers is worthy of consideration since it makes it possible for those interested in a special subject to study the paper and bring up pertinent questions during the time of presentation.

On Friday, 25th May 1951, the chairman of the 5th session of the Textile Institute Conference was a member from the United States, Mr W D Appel. This is the first time in the history of the Textile Institute Conference that a member outside the country has been invited to preside. This honor reflects credit on us because of our technical developments in the United States and also on Mr Appel as an individual.

* Presented in three parts on September 28, 1951 at the Swiss Chalet in Rochelle Park, N J.

While in the Manchester area, we had two meetings with the Society of Dyers and Colourists. The first of these took place in Manchester, where we dined with the Society of Dyers and Colourists finance committee. At this meeting, it was agreed that a top figure should be set for expenditures on the Colour Index. We were informed that costs in England had risen the same as they have in the United States, so that the original estimated costs were considerably higher today than at the time this joint project was undertaken.

The selling price of the Colour Index was also tentatively agreed upon. We also were in agreement that both interested parties would offer the book for sale at approximately the same price. This is equitable and fair since the contract specifically states how this matter is to be handled. I am pleased to say that our own Colour Index committee also are in agreement that both societies offer the book for sale at the same price.

The following schedule was accepted, in principle, as appropriate for publication of the new Colour Index. By the end of 1951, all data should be received. 1952 would be taken up by the compilation of data of authorized material by the printers. Printing schedule would require at least two years, 1953 and 1954. It is hoped that the book will be published in January 1955. I regret that January, 1955, is the earliest tentative date of publication. What, with the delay that already has occurred since this project was started, a great part is due to the fact that much new and original material is to be included in this publication. Also, there has been much added to the information on dyes already listed in the older Colour Index.

One of the very serious difficulties that we have encountered is the paper shortage in England and also the fact that the cost of paper suitable for use in this book is now much higher-priced than when our arrangement with the Society of Dyers and Colourists was originally made. Our colleagues in England have asked our help on this matter, and I have appointed a special committee to go into the possibilities of securing paper in this country. This committee will function as a subcommittee of the Publications Committee and it will maintain liaison with the Colour Index Committee. It has been suggested that a saving might be effected by printing o quota of books in this country from pla reproduced photographically. I assure y that with the additions and changes th have been made to the former Colour I dex, the new edition will be a much mo complete work than we have ever had. am very pleased to say that our Briti colleagues and ourselves have obtain the utmost co-operation from all dye ma ufacturers here and abroad. Also, so sources that we believed would not co tribute in detail have provided valuab and detailed information.

There is no question that our meeti with the representatives of the Society Dyers and Colourists has been of gre benefit to this project. The opportunity sit down and discuss our mutual proble over the table was most helpful, and were able to come to some definite agre ments in a very short time. We found o associates in England most co-operati and most anxious to work closely with u

In closing, I wish to thank Mr Cad the Colour Index Committee, and all wh have undertaken the monumental task preparing this work.

PART II—PROGRESS MADE IN INTERNATIONAL COLORFASTNESS STANDARD TEST METHODS

LEONARD S LITTLE

Chairman, General Research Committee and Executive Committee for Research

OUR president, Mr C Norris Rabold, the previous speaker, has made a general review of AATCC participation in European Technical Conferences in 1951. I will endeavor to bring you up-to-date on the specific subject of International Standard test methods for colorfastness and shrinkage.

The principal motive for making the trip to Europe on the part of Norris Rabold and myself was to represent AATCC at the meetings of the International Standardization Organization designated as ISO/TC 38 SCI at Bournemouth, England. These meetings were held from June 3rd through June 9th. In order to enable us, with the able asssitance of William D Appel, to make the progress we hoped to secure, it was essential that we arrange a series of informal meetings with representatives of other countries which were members of the Colorfastness and Shrinkage Groups. The first of the informal preliminary meetings took place at the Textile Institute Conference held at Brighton. Here we held discussions with the members of the British Colorfastness Co-ordinating Committee of the Society of Dyers and Colourists, of which Dr P W Cunliffe is the chairman. The writer is chairman of the Colorfastness and Shrinkage Committee for the United States. This committee of the American Standards Association (ASA), together with the British committee, hold a joint secretariat of the International Standardization Organization on these two projects: namely, Colorfastness and Shrinkage of Textiles. We also met with the continental groups represented by Dr Henry Ris of the Geigy Company at Basle, Switzerland, and several of his associates. It was agreed in these early sessions that we would endeavor to come to a common understanding on as many tests as possible where there was no great divergency between the British, the Continent and th United States in the methods generall agreed by each as a fair and representativ test procedures. By this method it was fel that real and encouraging progress coul be made rather promptly. This progra later proved quite effective in furtherin the objective more rapidly and satisfa torily than any of us originally felt woul be possible.

Because of the well-organized groun work laid before the ISO Official Bourne mouth Conference and an extremely co operative spirit, we were able to expedit our mission. The Colorfastness and Shrink age meeting actually got under way Thur day, June 7th, with the arrival of the Bri ish Group from Manchester on Wedne day. From that time on, the Colorfastne Section of the ISO met in almost continu ous sessions, carrying through to late eve ning in order to be able to present final report for the closing session Satur

day morning. At this point, I wish to compliment the officials of the British Standards Institution, which is the counterpart of our American Standards Association, for the fine business-like manner in which all of the sessions were conducted. Especially do I wish to call to your attention the efficient and most willing group composing their secretarial staff, who worked well into the night to supply the delegates with accurate and full reports of each previous day's meetings at the opening of the morning session. We will be faced with the responsibility of duplicating this performance if the Textile Section of ISO meets here in New York next June.

At the opening of the first formal session of the Colorfastness Subcommittee, Dr John Barritt, Honorary Secretary of the Society of Dyers and Colourists, was unanimously chosen to preside. He handled the work of the section in a most friendly and effective manner. The members of the group were excused from the plenary sessions held at the same time.

The first proposal was consideration of a graded grey scale for assessment of fastness tests. It was agreed to consider the use of the grey scale for evaluating in terms of (a) loss in depth of color and (b) degree of staining.

INTERNATIONAL LIGHT-FASTNESS STANDARDS——The British Colorfastness Committee have carefully reviewed the existing British, French and Swiss light-fastness standards showing the degree of fastness to light for eight classes as used by the dyestuff manufacturers in their published evaluations. They have presented a tabulation on which all three of the national standards are listed and discussed. Proposals were also made for international adoption. In each of the eight colorfastness designations the specific dye formula is given as now being used by the three respective countries. A new type of cloth for suitability for the standards is being examined and has been presented to each of the three countries and to ourselves for criticism. The purpose is to reach agreement on a common set of eight blue light standards which will represent the allowable color change in each of the eight grades. It is felt that it may be necessary with some colored materials to give two figures, one to indicate the stage at which the first perceptible change occurs and the other at which definite fading occurs. A discussion was held on the type of weave to be used on Colorfastness Cloth Standards. It was felt that twill weaves were not as desirable as plain. It was agreed that we would make dyeings on pigmented spun acetate vs cotton and wool or on dye spun acetate if no pigmented yarn is available.

Mr Appel agreed to represent the United States on a small working committee covering the items of color standards. It was agreed that two methods of sun (out-door) fading would be developed. The British and Continental countries feel that they require sun exposures for standard testing of light fastness. It was agreed that they would endeavor to set up rules for standard conditions and procedures. We in the United States are equally firm in our feeling that we need accelerated test methods as exemplified by our AATCC Colorfastness-to-Light Standard Test. The methods currently being employed use the Fade-Ometer as the standard testing unit. It was agreed that the United States delegation proceed with the responsibility of submitting first-draft proposals for standardized accelerated lamp-exposure methods for evaluation of light fastness.

The Colorfastness Committee next turned its attention to secure general agreement on as many test procedures as possible for first-draft proposals for International Standard test standards. The test methods considered were as follows:

ACID SPOTTING

General: By "fastness to acid spotting" is meant the resistance of colored materials to the action of dilute solutions of organic and mineral acids.

The test is applicable to all fibers at all stages of manufacture.

Two tests of increasing severity are given, and the choice will depend on the nature of the fiber.

Test Method: Two drops of a) 300g glacial acetic acid per liter or b) 50g concentrated sulfuric acid (sp g 1.84 per liter). The appropriate solutions are applied at room temperature and, to ensure penetration, the test specimen is pressed with a glass rod if necessary. Then the color change is evaluated.

ALKALI SPOTTING

General: By fastness to alkali spotting is meant the resistance of colored materials to the action of dilute alkaline solutions.

Test Method: Two drops of a solution containing 10 g of anhydrous sodium carbonate per liter ensure penetration; immerse, if necessary, in solution and squeeze to contain its own weight of solution. Dry at room temperature, brush and remove residue and evaluate.

CARBONIZING

General: Resistance of colored materials to treatment with dilute sulfuric acid at high temperatures. Applicable to wool or wool mixtures.

Test Method: Immerse in 50g conc sulfuric acid (sp gr 1.84) per liter for 15 min room temperature, liquor ratio 1:20. Squeeze to 80% own weight of solution. Dry in oven 30 min or longer at 60°C. Bake 15 min at 105°C. Neutralize after 5 min in a cold water rinse. Divide a) ½ dried at air temperature; b) ½ treated 15 min at 20°C in solution of 2g anhydrous sodium carbonate per liter, 1:40; rinse 5 min in cold water; air-dry at a temperature not exceeding 60°C. Assess.

HOT PRESSING

General: Resistance to ironing and to drying cylinders.

Test Method: Use iron at pressure of 30g/sq cm. Cotton, 200°C; wool, 150°C; acetate, 120°C.

(a) Dry Pressing: Iron between dry, bleached cotton limbric and leave for 5 sec or 20 sec.

(b) Wet Pressing: Place sample on dry, undyed, bleached cotton limbric. Then place another similar bleached fabric which has been soaked with water and squeezed to own weight on the test sample. Press to and fro over test sample (without additional pressure) for 5 sec or 20 sec. Assess: a) After pressing and again b) after conditioning in air for 2 hours.

MERCERIZING

General: Resistance to conc solution of caustic soda used in mercerizing. Applicable to cotton or cotton mixtures.

Test Method: Sew test sample on all sides to bleached cotton test cloth, fasten firmly to frame with test sample uppermost. Spot with solution of 300g sodium hydroxide per l at 20°C, let stand 5 min; rinse 5 min in 70°C water; rinse in running water. Remove from frame; acidify 5 min in a soln containing 5ml conc sulfuric acid per l; wash in cold running water until neutral. Unstitch three sides; dry in air at temp not exceeding 60°C with parts *not* in contact. Assess.

ORGANIC SOLVENTS

General: Resistance to organic solvents as used in dry cleaning.

Test Method: Solvents: white spirit, trichloroethylene, perchlorethylene, carbon tetrachloride as specified. Hand-agitate 30 min in solvent at 20°C, 1:40. Press every two minutes with glass rod without removing the sample from solvent. Squeeze; air-dry *without* stitching. Assess.

PEROXIDE BLEACHING

General: Resistance to hydrogen-peroxide bleaching baths in normal concentra-

tion.

Test Method: Treat one hour at 87.5°C, 1:30, with following concentrations per liter: 5ml 30% hydrogen peroxide, 0.07g crystal magnesium chloride, 5g sodium silicate. Initial pH, 10.3 to 10.6. Place sample in test tube or other suitable vessel, cover, maintain correct temp without undue movement. Squeeze, rinse 10 min in cold water, open three sides, air-dry at temperature not exceeding 60°C, ensure that different parts do not come in contact. Assess.

POTTING

General: Resistance to the action of boiling water. Applicable to wool or wool mixtures.

Test Method: Sew test sample on one short side only between an unbleached wool serge and a bleached cotton or fiber used in wool mixtures. Treat 1 hour in boiling distilled water, 1:30. Then roll sample around a 5-8 mm glass rod to form a cylinder 4 cm long and tie loosely with thread. Remove from rod, rinse 10 min in cold running water, open, dry without contact. Assess.

RUBBING

General: Degree of staining when colored materials are rubbed by other materials.

Test Method: a) Sample rubbed with dry white cotton lawn, or b) with same type fabric previously wetted and squeeze to contain own weight of water. Rub 10 rubs each to and fro in 10 sec. Dry test sample tested with wet lawn at room temperature. Assess.

SEA WATER

General: Resistance to action of sea water at body temperature.

Test Method: Wet thoroughly in solution of 30g sodium chloride per l in flat-bottom covered flask. Place smooth glass plate same size as test sample of approximately 50g on test sample and press evenly with fingers to remove air bubbles. Allow to stand for 15 min at room temperature. Pour off excess solution carefully. Keep at 370°C for 4 hours. Open, dry at air temperature without contact of fabrics. Assess.

SODA BOILING

General: Resistance to action of dilute sodium carbonate solution at the boil. The preparation of the sample shall be the same method as used in the potting test.

Test Method: Treat each of two test samples one hour in gently boiling solutions, liquor ratio 1:30, under reflux with an air condenser. a) 10g anhydrous sodium carbonate per liter and b) 10g of same plus 4g Inhibiton per liter. Remove from glass rod, rinse 10 min in cold running water, open, air-dry ensuring that the different parts do not come into contact. Assess.

STOVING

General: Resistance to the action of sulfur dioxide as used in bleaching.

Test Method: Immerse thoroughly 5 min at 20°C in a solution of 5g soap per l; squeeze to contain its own weight of solution; suspend 16 hours in 10-l vessel containing sulfur dioxide obtained by igniting 5g sulfur below test sample with vessel closed. Hang in air for 2 hrs at temp not exceeding 60°C. Rinse in cold running water. Air-dry. Assess.

WASHING

General: Resistance to the action of soap solutions as used in domestic and laundry washing.

Test Methods: a) Mild (hand test) 5 gr soap per liter; 1:50 at 40°C, 30 min. Wool materials neutralized 15 min in solution containing 10g sodium acetate crystals per liter at 40°C, 1:50. Repeat with fresh liquor and rinse after each treatment. Wash test is hand-agitated by pressing sample every 2 min with a glass rod without removing sample from solution. If mechanical apparatus is used, adjust time and liquor ratios to secure identical results.

Severe Test: Rinse twice in distilled water and follow with 10-min rinse in cold running water; squeeze, unstitch and open three sides; air-dry without contact of the test swatches. Method of washing to be determined later. Assess.

WATER

General: Resistance to immersion in cold water.

Test Method: Thoroughly wet sample for 15 min in distilled water in flat-bottom dish covered without disturbance with the water; place 50-g flat plate size of test samples over samples, press lightly to remove air bubbles, pour off excess water without disturbance of samples or plate, keep 16 hours at 20°C. Assess.

WATER SPOTTING

General: Resistance to spotting with distilled water.

Test Method: Spot at room temperature with approx 15 ml of distilled water. Assess. a) after 2 min; b) after air drying.

SHRINKAGE OF FABRICS IN WASHING

——The USA is the Secretariat for this subcommittee. We do not have sufficient proposals from other countries to prepare a first-draft proposal; however, we are preparing proposals in line with BS 1118 and Federal Specification CCCT, 191a.

The 16 proposed first-draft test procedures are now being carefully reviewed by the three groups: namely, the British, the Continental, and the United States, and these include all the countries represented. These are Belgium, Canada, Czechoslovakia, Denmark, France, India, Italy, Netherlands, New Zealand, Norway, South Africa, Sweden, Switzerland, United Kingdom, and the USA. We hope to have full comments from all the groups by mid-December of this year in the hands of the joint secretariats. From suggestions for improvement and revision it is expected that a final draft may be presented at the next meeting of the Textile Committee of ISO/TC 38. The present plans are to hold this meeting in June, 1952, at Columbia University here in New York City.

After the close of the ISO meetings at Bournemouth on Saturday, June 9th, Mr & Mrs Appel, Dr Worner and Miss Rollins of the Southern Regional Laboratories, Norris Rabold and I proceeded to the Continent. We visited the Textile Institute at the University of Ghent, Belgium; the Fiber Institute at Delft, Holland; the Textile Institute of France at Paris; and the Textile Department of the Federal Institute of Technology at Zurich, Switzerland. Between our two textile conferences in England we had previously visited the research laboratories of the Imperial Chemicals Co, the research laboratories of the Shirley Institute, the College of Technology of the University of Manchester, the research laboratories of Tootal Broadhurst & Lee, all of Manchester, as well as the Use-Development Organization of Courtaulds, Ltd.

We also were privileged to visit the laboratories and the plant of the Standfast Dyers and Printers, Ltd, of Lancaster. We saw their continuous molten-metal dyeing machine in operation, which could make a radical change from one shade to another in approximately 5 minutes. It is evident that this process had definite interest to dyers for continuous fast-color runs, especially shorter runs. At Bradford we visited the research laboratories of the Bradford Dyeing Associates.

On the Continent, in addition to our conference at the various textile research organizations, we were privileged to visit the extremely modern plant of the Union Cotonniere at Ghent, Belgium. This is an entirely new cotton-manufacturing plant with a one-floor arrangement. It is housed in a new building erected since World

War II and equipped with the very latest of machinery. Here they employ the most advanced methods of manufacturing, conditioning, and provide their employees with most modern machine organization and with scientifically worked out incentive programs, developed by the top textile engineers there and abroad. After a morning session with the members of the Swiss Color-Fastness Committee, Messrs Appel, Rabold, and I visited the research laboratories and plants of the Ciba Company, the Geigy Co, and the Sandoz Chemical Works at Basel, Switzerland. The laboratories and plants were quite modern in their layout and equipment and were efficiently operated. The co-operation and courtesies we received were most cordial and sincere. A most informative and enjoyable trip was made to the research laboratories and plant of the Heberlein Co at Watwill, Switzerland, which is about 40 miles beyond Zurich. Here, as in the case of every other visit we made, we were most cordially entertained. Although the plant was not entirely equipped with all the latest finishing, dyeing and printing machinery, it is maintained in a most efficient condition and produces some of the finest specialized finished fabrics found today. They have many patented and world renowned processes in which they excel.

SUMMARY

The ISO Conference made considerable progress toward agreement in setting up international standards for the textile industry. Probably the greatest progress was made in the Colorfastness Subcommittee, of which we are joint secretariats. In instances involving expensive mechanical test apparatus, it will be necessary to set up alternate methods involving hand procedures or procedures requiring less expensive equipment. This step is necessary because of the limited availability of equipment in other countries as well as of the limited funds available for immediate purchase of such equipment. This is evident in test methods which employ such instruments as the Fade-Ometer, the Launder-Ometer, flat-bed presses, etc.

There can be no doubt as to the value of international standard test methods to world-wide textile industry. Industry and textile-manufacturing, chemical-manufacturing and textile-research organizations are fully interested in and are supporting the work of ISO. Our AATCC is contributing through ASA materially to the successful establishment of international test methods, which will be of great value and usefulness to the textile industry as a whole.

PART III—ACCOMPLISHMENTS AT THE INTERNATIONAL CONFERENCE IN BOURNEMOUTH, ENGLAND

WILLIAM D APPEL

Leader, U S A Delegation
Chief, Textiles Section,
National Bureau of Standards

TONIGHT I can give only a brief sketch of the Bournemouth Conference and its accomplishments and show only a few pictures relating to the activities of your delegates abroad. You will have an opportunity to hear more complete reports from the delegates to the Bournemouth Conference at a meeting to be held in New York on the afternoon of October 16 in connection with the meetings of Committee D-13, ASTM, and the convention of the AATCC.

The Technical Committee on Textiles of the International Organization for Standardization met in Bournemouth, England, from June 4 to 9, 1951. Nearly 100 delegates from sixteen countries were present. The U S A delegation, organized by the American Standards Association with the sponsorship of AATCC and ASTM, had 15 members. It was exceeded in number of members only by the United Kingdom delegation of 35. The AATCC was officially represented by President Norris Rabold and by Chairman of the Research Committee, Leonard Little.

The conference dealt with some 20 technical subjects in ten plenary sessions and in subcommittee, working-group, and delegation meetings that filled all of the rest of the time and kept most of us up half of each night. English and French were the official languages; formal discussions were translated from one to the other as required.

Our host was the British Standards Institution, which holds the Secretariatship for the Technical Committee. Thanks to the thorough planning, excellent arrangements, and cordiality of the representatives of the B S I, the conference was an enjoyable and profitable experience for all of us.

Perhaps the greatest value of the conference lay in the personal contacts and friendships established between delegates and the exchange of information. The discussions led to a clarification of the problems to be solved, and personal contacts provided channels for continuing discussions and co-operative work.

We learned, for example, that in England textiles are commonly subjected to boiling temperatures in laundering and that in India they are pounded with a flail. Obviously, these conditions of use will influence testing procedures in these countries. Tensile testing in Europe and tensile testing in the United States differ in so many ways that each region will have to study the procedures used in the other before common standards can be agreed upon. The cost of some of the testing equipment commonly used in the United States is prohibitive for those European laboratories in which the volume of testing is relatively small.

One of the stumbling blocks at the conference was the difference in meaning of words in the English speaking countries. For example, after a somewhat lengthy discussion of commercial weights and regains, we discovered that "regain" means moisture regain to some, moisture regain and finishing materials on the textile to others. The confusion resulting from differences in meanings of words was avoided in some of the discussions by agreeing on concepts in the meeting and leaving the selection of the most appropri-

ate words for the concepts to delegates from the countries concerned.

Mr Little has told you of the very great progress made in development of international agreement on tests for colorfastness. That came as a surprise to some of us who had attended the first meeting of the Committee in Buxton in 1948. This was due to the efforts of the British and Continental fastness committees and to the good work of Messrs Little and Rabold.

Other subjects of special interest to AATCC included analysis of fiber mixtures, definition of the term "rayon", testing terms and definitions, shrinkage in laundering, sampling and statistical analysis.

The first international standard to be expected as a result of the work will cover the designation of twist in yarns. The S and Z designation has been adopted as a national standard in ten countries and has been approved by twenty-six. It is well on the way to becoming an international standard.

A universal system for numbering yarns of all kinds, which it is hoped will gradually displace the many systems now used, was agreed upon at Buxton and further developed at Bournemouth. It is a direct, decimal system based on metric units. The Grex numbering system advocated by the ASTM and very ably championed by Dr Scroggie of the American delegation is in conformance with it, and so is the gK system advocated by the British Textile Institute. It was agreed to express yarn numbers in either of two units——the weight in grams per 10 kilometers ("grex" units), as is done in the ASTM, or the weight in grams per kilometer ("tex" units), the British recommendation——or multiples or submultiples of the units. The use of the system is to be encouraged in the member countries. Technologists agree that the system is workable and a great advance over the use of many different systems as at present.

You all know, even better than I, the importance of international trade in textiles to nearly every branch of U S industry. We are dependent upon foreign sources of supply for some of our fibers; other countries depend upon the United States for theirs. Not only raw materials, but intermediate and finished products, are sold in large quantities in international trade. The quality and properties, as well as quantity and price, affect markets and competition in both producing and consuming countries. The need for clearly defined terminology and methods for testing textiles in international trade is growing. We recommend continued and increasing participation of U S industry in the efforts of ISO to fill the need. AATCC should take a leading part in the work.

R I Section Meets Friday at Sheraton-Biltmore

THE Rhode Island Section meets this Friday (November 16) at The Sheraton-Biltmore in Providence, R I, for their Annual Meeting and election of officers. Guest speaker for the evening will be Sumner H Williams of General Dyestuff Corporation, who will speak on "The Hot-Oil Dyeing Process".

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Hudson-Mohawk Meeting Report

Sept 21, 1951
Jack's Restaurant, Albany, N Y

THE first of the fall meetings of the Hudson-Mohawk Section was held Friday, September 21, 1951 at Jack's Restaurant, Albany, New York. The speaker for the evening was Dr Edwin I Stearns, assistant to the director, Applied Research Department, Calco Division, American Cyanamid Company. His paper was entitled "What's New in Spectrophotometry".

Plans for the fall meetings, and the presentation of a paper by a student member of the Utica Technical Institute at the National Convention, were discussed.

Fifty-six members were present.

Respectfully submitted,
WILLIAM A NELSON
Secretary

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Membership Applications

SENIOR

William H Breitenbach—dyer & finisher, Baldwin Mfg Co, Elk Mills, Md. Sponsors: T H Hart, E C Diehl.

Arthur B Crooks—colorist, American Cyanamid Co, Calco Chemical Div, New York, N Y. Sponsors: P J Luck, W R Shaw.

Wilfred J Laferriere — overseer, The French Worsted Co, Woonsocket, R I. Sponsors: A Goosetrey, J H Gormley.

Edward P Landau—lab director, United Merchants Labs Inc, South Orange, N J. Sponsors: T G Hawley, Jr, J E Phragmen.

Harry J Mack — dyer, Morschner Dye Works, Newton Upper Falls, Mass. Sponsors: H A Morrison, W J Flanagan.

C Watson Nichols—dyer, Aberfoyle Mfg Co, Southern Div, Belmont, N C. Sponsors: W B Carroll, J L Moore.

William T J Oliphant—sales manager, Patent Chemicals, Inc & Synthetic Chemicals Inc, Paterson, N J. Sponsors: N A Johnson, J J Sokolinski.

William H Page—divisionsal sales manager, Irwin Dyestuff Corp, Ltd, Montreal, Canada. Sponsors: C W Teichgraber, F D Wallace.

George R Parkin—manager, Quality Control & Research Labs, Arms Textile Mfg Co, Manchester, N H. Sponsors: E C Schloth, E C Grant.

Carl A Passaro—dyer, Grant Fabrics Finishing Co, Paterson, N J. Sponsors: R W Brewer, J W Fowler.

Robert G Perriello—assistant sales manager, Warwick Chemical Co Div, Sun Chemical Co, Wood River Junction, R I. Sponsors: D J Eccleston, I S Hurd.

H Peter Rossiger—president, H P Rossiger & Co, Inc, New York, N Y. Sponsors: P J Wood, E S Chapin.

Paul B Stam—research chemist, Dan River Mills, Danville, Va. Sponsors: H Y Jennings, H M Chase.

Herman B Weisz—chemist, Rock Hill Printing Co, Rock Hill, S C. Sponsors: W B DePass, F V Tribble.

Harry L Welsted, Jr—salesman, Monsanto Chemical Co, Charlotte, N C. Sponsors: H L Lovejoy, R N Foster.

ASSOCIATE

Stewart H Newland — district manager, Wallace & Tiernan Co, Newark, N J.

Edward W Prosser — laboratory dyer, Bradford Dyeing Association, Bradford, R I.

Gaston M Randolph — textile chemist, Tennessee Eastman Co, Kingsport, Tenn.

JUNIOR

Robert M Bateman—sales, textile chemicals & finishes, Atlas Powder Co, Brantford, Ontario, Canada. Sponsors: J Rowatt, R W Graham.

Ernest E St Louis — associate research chemist, Warwick Chemical Co Div, Sun Chemical Corp, Wood River Junction, R I. Sponsors: H B Goldstein, I S Hurd.

Edward A Schlirf—laboratory technician, Arnold Hoffman Co Inc, Charlotte, N C. Sponsors: D L Turner, W L Mills.

STUDENT

Gordon L Axon—Lowell Textile Institute. Sponsor: E E Fickett.

Eleanor B Zoglio—Lowell Textile Institute. Sponsor: E E Fickett.

Purushottam T Bhide—Philadelphia Textile Institute. Sponsor: W H Hughes.

Albert McLuckie — Philadelphia Textile Institute. Sponsor: W H Hughes.

Applications for transfer to Senior Membership:

Philip S Durfee Milton L Segal
John F Kneeland

CORPORATE

Drexel Knitting Mills Co, Drexel, N C.
Chatham Mfg Co, Elkin, N C.

Hudson-Mohawk Section——

DYEING AND WET-FINISHING DYNEL FABRICS*

T A FEILD, JR

Carbide and Carbon Chemicals Co
South Charleston, West Va

T A Feild, Jr

Dynel, a wholly synthetic copolymer of vinyl chloride and acrylonitrile, is a chemically stable, moth-resistant, thermoplastic fiber, which does not dye readily because it is so hydrophobic. The great usefulness of this fiber for half hose, pile fabrics, blankets, blends for men's wear and for other textile purposes, however, gives great importance to the problem of dyeing dynel textiles.

The author explains how high temperatures, sodium sulfate, anion-active dispersers, paraphenylphenol, and a cuprous compound are employed in various ways in the application of dyes to the new fiber. Acetate dyes, basic dyes, acid dyes, vat dyes, leuco esters of vat dyes and pigments have already been successfully applied. The author also explains how high temperatures and salt are involved in delustering and relustering dynel.

ALTHOUGH many are familiar with dynel, a brief description of the product, its composition, form, properties and uses will help to explain the reasons for dyeing and finishing by the procedures outlined. Dynel is a new fiber produced in staple form by Carbide and Carbon Chemicals Company, A Division of Union Carbide and Carbon Corporation. It is made from a resin having 60 per cent of vinyl chloride and 40 per cent of acrylonitrile in the copolymer. The fiber is now being sold commercially in sizes ranging from two to twenty-four denier in a range of fiber lengths. For the information of those who may be interested, the name dynel is a generic term for staple fiber produced from the copolymers of vinyl chloride and acrylonitrile.

The properties that characterize dynel are the following: sensitivity to heat, dimensional stability, warmth, rapid drying, strength both wet and dry, resistance to combustion, chemical, moth, and mildew resistance. The fields in which dynel is entering or is under investigation are extensive. Blankets, half hose, pile fabrics, filter fabrics, dye nets and suiting blends are a representative few.

Those dealing with the dyeing and finishing of a textile fiber must be concerned with the physical properties of the fibers that have a direct bearing on the success of these operations. In this discussion it is our desire to emphasize three of these properties of dynel that are of particular importance. A little later we will discuss the actual dyeing operations.

RESISTANCE TO CHEMICAL ATTACK——Chemical resistance and dyeability probably seem to be contradictory terms. Actually, dynel is very resistant to most acids and alkalis in rather high concentrations and to many other chemicals at room temperature and above. As temperatures are increased, its resistance to certain chemicals decreases, and, in a few cases, absorption of the chemical by the fiber may take place to cause fiber shrinkage or even actual degradation.

To the dyer these characteristics mean that few chemicals can be expected to serve as dye assistants except at elevated temperatures, and still fewer of the chemicals encountered in the dye house are likely to harm a dynel fabric under normal conditions of usage.

HEAT SENSITIVITY——Dynel is a highly oriented thermoplastic fiber. As it is not a true crystalline material, it does not have a fixed melting point but shrinks when temperatures in excess of its strain-release temperature are encountered. In the manufacturing process the fiber is stabilized so that, in boiling water and in dry heat at 240°F, it has a shrinkage of three per cent or less. When a temperature in excess of 240°F is selected for finishing, for example, the fiber will shrink a certain amount because of the release of orientation strains. This shrinkage will occur unless the shrinkage is resisted by the construction of the fabric or by mechanical means. In boiling water or in dry heat at 240°F, dynel fibers and fabrics are in such a condition that the application of tension will elongate the material. This fabric extension, however, will be recovered in boiling water when the strains are released. Creases imparted to dynel fabrics in boiling water cannot be removed at lower temperatures.

These properties mean that, in dyeing, the final hot baths must be cooled slowly to prevent fabric wrinkles and creases. In finishing, the employment of proper temperatures and tension is essential to obtain optimum fabric characteristics. In many cases dynel fabrics are designed to have a high shrinkage in dyeing in order to simulate the felting action of wool. Proper finishing is of course essential to maintain these desirable characteristics in the finished product.

ACTION OF WATER——At temperatures up to about 175°F, water has little action on dynel. As the temperature increases to 205°F and above, the fiber becomes semipermeable, and water enters the fiber to cause mild swelling and what we call delustering. This delustered state of the fiber persists after the fiber is cooled and dried. In certain applications the delustered fiber is wanted and no effort is made to restore the luster. When it is desired to restore the original luster the fiber may be heated at 240°F for a brief period or treated in a bath at a boil with a 6-percent-by-wt solution of sodium sulfate.

To the dyer the fact that dynel becomes delustered in boiling water and in a boiling dyebath means that this property must be considered in obtaining full shades. Because a dull fiber will appear under shade,

* Presented before the Hudson-Mohawk Section in Albany, N Y, on March 16, 1951.

it is essential for full colors that the original fiber luster be restored by one of the methods suggested. There have been a number of cases where dyers have failed to consider this property and were unable to reach shade even with a great excess of dyestuff.

As the processes for dyeing dynel were developed, they went through several stages. First, we were happy to get a color of any kind on the fiber. Then we found a class of dyes that would go on nicely, and we thought our worst troubles over. The more we learned the more we found we had to learn—first it was wash fastness, then it was light fastness, crock fastness, rates of dyeing and a host of other characteristics, which differ not only between classes of dyes but between members of the same class. We therefore have no intention of implying that we know all the answers to the dyeing of dynel. We do have some knowledge and a fair amount of experience, which may be of interest to you.

If the question were asked, "How do you dye dynel?", and we had to answer in a few words, we would say, "At temperatures above 205°F". The significance of this statement is that at 205 to 212°F the fiber surface is more capable of transmitting water and dye molecules to the available dye sites in the fiber. As temperatures drop below 205°F, the availability of the dye sites decreases rapidly, and at temperatures below 175°F strong bleaching and reducing agents may be used on the dyed fiber without altering the fixed color.

There are many ways of dyeing dynel and the application of color to these fibers requires the exercise of the usual good practices followed in a well-managed dye house. In placing emphasis on the temperature of 205°F, we do not mean that no color will go on dynel at lower temperatures. We do mean that, for proper color fixation and color yield in commercial operations, lower temperatures are usually inadequate except where special techniques are employed. Many dyes can be "crocked" onto dynel in fairly heavy amounts at the lower temperatures, and it is for this reason that the usual cautions must be exercised to prevent unevenness in the finished product.

THE ACETATE COLORS——The dyes that are easiest to apply to dynel are the acetate colors. Almost the entire range of acetate dyes, with the exception of those requiring development, can be applied. They have the great advantage of leveling well. Commercial application is accomplished in a dyebath at 205°F or above with about one per cent of a good dispersing agent. Excessive amounts of dispersing agent will retard or even prevent dyeing. In short baths, such as in package and stock dyeing, we suggest the use of a high pH to maintain the dispersion of the dyestuff.

Dyeing is usually carried out for one hour; then forty to sixty per cent of sodium sulfate on weight of fiber (owf) is added to improve exhaustion and to maintain fiber luster. The salt addition is particularly desirable for heavy shades. The dyed goods are rinsed, scoured at 175°F and, where maximum wash fastness is required, given a second treatment at 160°F with 1 per cent of Tergitol Wetting Agent 7 and 2.0 per cent of sodium hydrosulfite owf. From 1 to 2 per cent of Amide PES is finally applied as an antistatic finish.

The light fastness of acetate dyes on dynel cannot be judged from their fastness properties on acetate. Most of the yellows are excellent, and selected blues, reds and violets have been found that have acceptable light fastness to complete the range.

BASIC COLORS——Basic dyes are of interest primarily for fluorescent and brilliant shades on dynel where light-fastness requirements are not important. Their application requires a low starting-bath temperature. The dyebath is maintained at a low pH with acetic acid, and the color is slowly exhausted onto the fiber with additions of Tergitol Wetting Agent 7 and with a gradual increase of bath pH. 2.25 per cent of p-phenylphenol is often used as a swelling agent to obtain better dyestuff penetration. Commercial dyeing time is one and one-half hours at 205°F or above. The relustering processes may or may not be used, as desired.

ACID COLORS——A large number of acid dyes can be applied to dynel. While the list is extensive, only a few metallized dyes are included at present. As the fastness properties of the acid dyes vary with the color, dye selection is very important.

Four different procedures are employed for the application of acid colors according to the shade and end-use requirements. Each of the procedures, of course, requires the use of proper dyeing temperatures.

For pastel shades the dye is usually applied at a pH of 6 without the aid of assistants other than an anionic disperser to prevent the color from exhausting too rapidly. It is important that the goods be thoroughly wet out before the dye is added to the bath. After addition of the color the dyebath temperature is raised to 205°F or above, and dyeing is continued for one to one and one-half hours. The dyed goods are scoured and finished as described for the acetate colors. Certain of the whitening dyes are often employed to brighten pastel shades. Calcofluor White RW *(1)* and Blancophor AW Conc *(2)* have proven of value for this use.

For medium shades two procedures may be employed. In the first, 2.25 per cent of p-phenylphenol is introduced into the cold dyebath as the sodium salt or in the micronized form as Purasist *(3)*. When micronized p-phenylphenol is employed, the assistant is pasted with a disperser stable to a boiling acid dyebath and added directly to the bath. When crystalline p-phenylphenol is used, it is mixed with one-third its weight of sodium hydroxide and dissolved in a small amount of hot water. The solution is added to the bath.

After the swelling agent has been dispersed in the bath, acetic or formic acid is added to adjust the pH to an initial value of about 6. The dyestuff is then added, and the bath temperature is raised to the dyeing temperature. Additions of acid may be made to improve color exhaustion.

In the second method for obtaining medium shades, reduced copper is employed to form a bond between the dyestuff molecule and the fiber. In a typical case one or two percent of a cupric salt, such as cupric sulfate, is dissolved and added to the bath, containing a wetting agent. To this bath is then added one-half as much reducing agent as cupric sulfate, the reducing agent being zinc formaldehyde sulfoxylate, which is sold commercially as a stripping agent under many names. The dyestuff is finally added, and the temperature of the bath is raised to the dyeing temperature. Color exhaustion may be improved by additions of acid, and, where desirable, additions of copper salt may be made, provided it is reduced with reducing agent before addition to the dyebath. Dyeing time is usually one and one-half hours at the dyeing temperature.

Each of the methods for obtaining medium shades has merit for certain applications.

For very heavy shades the two methods used for obtaining medium shades are consolidated. Thus, reduced copper and p-phenylphenol are employed together to obtain very striking increases in color build-up. Further details of these methods are described in our dye manual.

Salt may be employed for maintaining luster during dyeing for some colors, but care must be exercised as salt will reverse or retard dyeing with others. It is quite commonly used at the end of dyeing, usually in a new bath. In cleaning up the material after dyeing we often employ a stripping agent where wash-fastness requirements must be met.

DIRECT COLORS —— Certain direct

(Concluded on Page P744)

New York Section——

DRY-CLEANING PROCESSES*

GEORGE P FULTON

Research Director
National Institute of Cleaning & Dyeing
Silver Spring, Md

INTRODUCTION

A BETTER understanding of dry-cleaning processes by you, who develop and manufacture new materials, would make for less trouble for the cleaning, textile and dyestuff industries. At the laboratory at Silver Spring, Md, we have one department to which dry cleaners all over the country send their problem garments. This department handles over 15,000 garments annually, garments with color gone, garments where holes have appeared, or where shrinkage or other trouble has occurred. It is our problem to determine what caused the trouble. Sometimes we find it originated from some condition during wear. For example, many stains, such as those of fruit juices or drinks, may be invisible until pressed. The heat of pressing develops a brown indelible stain.

Sometimes we find it was the fault of the dry cleaner. To minimize this, we periodically send out technical bulletins to our members. These describe new types of materials as they appear on the market and tell what precautions must be observed in handling them. In many cases, however, there is something about the material that would not withstand dry cleaning processes.

When a new type of material that cannot be successfully dry-cleaned begins to reach dry-cleaning plants, we at Silver Spring usually have about one such garment a week sent to us for three or four weeks. Then we often get them at the rate of 12 or 15 each week for the rest of the season.

We believe if you, who develop and manufacture new materials, had a better understanding of dry-cleaning processes, there would be less trouble of this type.

George P Fulton

The research director of the National Institute of Cleaning & Dyeing claims that an understanding of dry cleaning by those responsible for dyeing and finishing textiles will lessen the troubles not only of the dry cleaner but of the textile manufacturer as well. He therefore proceeds to explain the general processes, chemicals and equipment employed in this very large industry. Solvents, prespotting, sorting, assistants, use of water in dry cleaning, soil redeposition, drying, spotting, and pressing all come in for explanation and discussion.

It is made clear that up to 10% of some textile articles received for dry cleaning are so dirty that they must be wet-cleaned. Wet cleaning is often a problem because many of such articles are not really suitable for cleansing in water.

Mothproofing, the application of water-repellent finishes and other services of the dry cleaner are mentioned. Special problems resulting from new methods and materials in textile manufacturing are pointed out.

DRY CLEANING

SOLVENTS——In dry cleaning, the main cleansing process is carried out in an organic liquid, which we call the dry-cleaning solvent. Most dry cleaning is done in a petroleum solvent known as "Stoddard solvent", but the chlorinated hydrocarbon solvents are also used—usually tetrachloroethylene (perchlorethylene) or carbon tetrachloride. Since these latter solvents are nonflammable, they are used rather widely in metropolitan areas where fire codes restrict the use of flammable solvents.

Dry-cleaning solvents simplify the cleansing of many garments that would be very difficult, expensive, and sometimes impossible to cleanse in water. Dry-cleaning solvents do not swell and soften fibers, nor do they cause shrinkage or loss of color, often encountered when fabrics are cleansed with water. They do not remove creases or pleats. If an ordinary wool suit is cleaned in water, subsequent pressing is much more difficult and time-consuming than it would be had the suit been merely dry-cleaned.

SOILS——We can classify the soil in garments into several types. One type of soil is typified by grease or oil. This type may be difficult to remove in water but readily dissolves in dry-cleaning solvents. Another type of soil, ordinary grime and dirt, is soluble in neither water nor in dry-cleaning solvents. It is usually covered with a film of grease, so it also is difficult to wet out and remove with pure water. Dry-cleaning solvents easily wet out such soil regardless of how greasy it may be and remove it from fabrics more readily than does water alone. However, a mixture of water and a detergent removes more such insoluble soil than do dry-cleaning solvents alone. Detergents are also added to dry cleaning solvents, but dry cleaning still does not remove insoluble soil as effectively as do soap and water.

Water-soluble spots and stains comprise another type of soil which, of course, consumers are very anxious to have removed from garments. Spots from foods and beverages are typical examples. The spot gets on the garment in the presence of water, which softens the fibers and allows the dissolved material to penetrate into them. Such spots are easily removed by water but are not completely removed by cleansing in dry-cleaning solvents.

SORTING——In a dry-cleaning plant, garments are first classified according to their type. For example, dark-colored wool garments are dry-cleaned together. Light-colored wool garments are cleaned separately; rayon dresses make up still another load; raincoats, still another.

* Presented before the New York Section at Rochelle Park, N J, on Jan 12, 1951.

PRESPOTTING——The garments are then taken to the dry-cleaning room. Some of them are prespotted. As the name implies, prespotting is the removal of spots before dry cleaning. It involves the use of various organic solvents to remove spots, such as paint, salad oil, and fingernail polish. The solvents used do not damage cellulose acetate. However, they do remove some pigment prints. Of course, a dry cleaner should recognize such pigment prints and not prespot them. However, that means that certain types of spots cannot be removed from such fabrics.

DRY CLEANING——The garments are then put into a washer about 1/3 filled with the dry-cleaning solvent. Most dyed fabrics show no bleeding in dry-cleaning solvents. Occasionally, however, we encounter a color that does not withstand dry cleaning. There is one pink vat color that seems to be the most common offender. Of course textiles are not always colored with dyestuffs. We have found some gilded materials that lose color during dry cleaning.

A dry-cleaning washer resembles a laundry washer and the garments are placed in it in the same manner. As the washer revolves, the garments drop and thus are subjected to some mechanical agitation. This is necessary to achieve adequate detergency. This mechanical agitation does not affect most textiles, but occasionally we find some that do not withstand it successfully.

During the past year we have seen hundreds of dresses of a rib-weave taffeta construction. Mechanical agitation in the washer often breaks the fine yarns that float over the ribs. Often these yarns have been broken during wear, after which agitation in the dry-cleaning washer makes the damage become quite apparent. The failure of such fabrics is of course difficult to predict by laboratory tests.

The combination of mechanical agitation and solvent action affects some pigment-type prints. We have found some air-brush prints to be affected this way. Dry cleaning does not entirely remove the pigment but takes off enough to be noticeable. Mere soaking in the solvent doesn't affect it, but rather, the combination of the solvent and mechanical agitation.

Some napped rayon fabrics are made to imitate furs. Often the nap has been made to lay in different directions to give various patterns. Mechanical agitation in a dry-cleaning washer often rubs up the nap, thus destroying the pattern.

ASSISTANTS —— Usually a soap or synthetic detergent is added to the dry-cleaning solvent during the washing operation. The purpose of this is to increase soil removal and to prevent soil from redepositing onto the garments. In many cases an emulsion of water is added to the dry-cleaning solvent along with the dry-cleaning detergent. This is especially beneficial when the relative humidity is low, and the amount of regain moisture in the garments correspondingly low. In dry weather, soil is more difficult to dry-clean from textiles, and there is a greater tendency for an accumulation of static electricity during the dry-cleaning process. Our experimental work has shown that when the relative humidity is below 40%, soil has more tendency to redeposit on the fabrics being dry-cleaned. Addition of an emulsion of water to the washer overcomes some of these difficulties.

The water is added in direct proportion to the weight of the garments, for the garments absorb it from the emulsion within a very few minutes. The various fibers in the load do not all pick up the same amount. Unpublished work, which we have carried out, indicates that it is distributed between different fibers, such as wool, cotton, and rayons, in approximately the same ratio as those various fibers pick up regain moisture from the air at a high humidity. The amount of moisture added varies with the type of load being cleaned and also varies from one dry-cleaning plant to another. Popular formulas add 1½ to 3% of water on weight of fabric, although, in cleaning raincoats, it is common practice to add about 6% of water. The amount of moisture added is small compared with the regain moisture in fabrics on an ordinary humid day, and usually causes no shrinkage or wrinkling. It is of course possible for an over-zealous operator to add too much water. When this is done, especially on humid days when the regain moisture in the textiles was high before they were ever placed in the washer, shrinkage and pilling up of wool materials may occur, especially in the case of soft, loosely woven materials. The experienced dry cleaner adds water very cautiously when dry-cleaning soft wool garments.

It is more difficult to prevent redeposition of soil in an organic solvent than in an aqueous system. Sometimes, when soil redeposits during dry cleaning, especially on wool, it cannot be removed by subsequent cleansing. We have studied the factors that contribute to redeposition of soil in organic solvents and instruct the dry cleaners so they can usually prevent it. Although some graying from redeposition of soil is caused by faulty dry-cleaning plant procedure, there are some cases that seem beyond our control. We have seen a number of cases where graying was limited to certain panels of a coat. This indicated that there was a difference in the fabric from which the two panels were made, perhaps because some of the wool contained a finishing agent that made the soil adhere to it.

We have seen nylon net fabrics treated with a melamine resin that held soil tenaciously. Such materials sometimes pick up soil during dry cleaning. Moreover, airborne soil that settles on them while on display is difficult to remove by conventional dry-cleaning methods. However, we have worked with the producers of this material and believe now we have a method of successfully dry-cleaning it.

Some dry-cleaning soaps are slightly alkaline, although seldom enough to affect colors. Some prints on pure silk, however, are so sensitive to a slight increase in pH that even dry-cleaning soaps change their color. Neutralization in a mild acid bath often is not practical, for such prints usually bleed profusely in any aqueous solution, whether it be acid, alkaline or neutral.

Dry cleaning removes the plasticizer from fabrics coated with a vinyl resin. The fabric then becomes stiff and crackly. Dry cleaners have learned to recognize coated fabrics and don't dry-clean them. They have also learned that, if one is dry-cleaned in error, the plasticizer can be replaced and the fabric resoftened. However, vinyl-coated fabrics are sometimes used as innerliners. Since the innerliner is not visible, the garment is dry-cleaned. Any attempt to put a plasticizer back into an innerliner would leave the outer fabric with an oily appearance.

Once soap or detergent has loosened soil in dry cleaning, the solvent is pumped out of the washer, through a filter, and back again into the washer. This circulation of solvent through the filter and washer is continued until the sight glass on the downstream side of the washer shows the solvent to be clear.

DRYING——After garments are dry-cleaned, most of the excess solvent is removed by centrifuging. Solvent still remaining in them is then removed by drying in a device called a "tumbler". Here the garments are agitated in a revolving cylinder while heated air is blown through them. The air is usually at a temperature of 120°F for drying dresses, and at 140 to 160°F for drying wool garments.

During this drying there is a gradual rise in temperature of the garments and drying out of moisture, as well as dry-cleaning solvent. The moisture content of wool garments usually drops to about 2% by the time they are removed from the dryer. This final moisture content depends on the moisture content of the air in the tumbler room and the temperature to which it is heated. If the temperature in the tumbler is too high, there is apt to occur shrinkage of soft, loosely woven wool garments. This is apparently due to

the wool becoming temporarily harsh and somewhat brittle, a condition that seems to promote felting. During the past few years, most dry cleaners have installed some type of temperature control, or at least a temperature-indicating device, on their tumblers to eliminate most of this type of shrinkage.

There are some wool materials which will felt even in the dry-cleaning washer; for example, Angora sweaters. Dry cleaners know this and clean such sweaters by hand. Occasionally other wool fabrics are encountered which also have a great felting tendency, and where there is nothing about the appearance to indicate this fact to a dry cleaner. For example, we have recently encountered an imitation white fur. The back of the fabric is not woven but is knit, and this detracts from its dimensional stability. Mechanical agitation during dry cleaning makes the wool fibers on the surface become tangled as though felted. Needless to say, excessive shrinkage results.

CHLORINATED SOLVENTS——Considerable drycleaning is done in chlorinated hydrocarbon solvents. The most popular solvent of this type for drycleaning is tetrachloroethylene (perchloroethylene), although carbon tetrachloride is also used. It has been estimated that 1/5 of the dry-cleaning volume in this country is done in chlorinated hydrocarbon solvents, although some have estimated it as high as ¼. Obviously, there is considerable probability that, some time during the wear-life of a garment, it will be dry-cleaned in a chlorinated hydrocarbon solvent.

The chlorinated hydrocarbons have more powerful solvent action than has Stoddard solvent. Buttons of polystyrene are softened in Stoddard solvent, but dissolve completely in chlorinated hydrocarbons. During the past year we have received hundreds of garments made of a taffeta decorated with what appears to be a velvet stripe. Actually, the stripe is a flock held to the fabric by an adhesive.

One dry cleaning in Stoddard solvent often softens the adhesive and may cause some loss of flock, but one dry cleaning in tetrachloroethylene removes it almost entirely. This is why we feel that laboratory tests on fabrics for fastness to dry cleaning should use a chlorinated hydrocarbon solvent rather than Stoddard solvent, and we are glad to see that the AATCC tests specify that a chlorinated hydrocarbon be used.

We have encountered a number of nylon net fabrics sized with a plastic material. Unfortunately, tetrachloroethylene softens the plastic finish so that the nylon net comes from the washer in a sticky, balled-up condition. Such garments can be restored by immersing them in amyl acetate, which removes the plastic finish completely.

An adhesive is again used in a type of imitation Persian lamb. This consists of the imitation fur fastened to the backing fabric with adhesive. Dry cleaning in either Stoddard solvent or chlorinated hydrocarbon solvents softens the adhesive with the result that the imitation fur comes off the backing fabric.

SPOTTING —— After garments have been dry-cleaned and dried, they are taken to the spotting department. Here water, or a mixture of water and other chemicals, is applied to local areas of garments to remove water-soluble spots. The source of water is usually a steam gun held far enough from the fabric not to raise its temperature. Most of the spots encountered here are water-soluble materials, such as foodstuffs or beverages that have not been removed during dry cleaning. Underarm areas of dresses are also spotted to remove perspiration. Some spotting must be done on almost every garment if a first-class job of cleansing is to be achieved.

The operator who performs this operation is called a "spotter". He must possess considerable manual skill or he will damage garments. He must know methods for removing various types of spots, but, most important of all, he must know what all the common fabrics will not stand. This of course necessitates that he be able to identify various fibers. Obviously, he must know what solvents will and will not damage acetate rayon.

The spotter knows there are some fabrics that will not even withstand the local application of water necessary to remove simple food stains or perspiration. He likes to work on moires of acetate rayon, but knows that a moire design on any other fiber usually is destroyed by moisture. The result is that he makes no attempt to remove spots from moires except on those of acetate rayon. Taffetas of cellulose acetate present no problem, but an experienced spotter will be very wary of heavily sized viscose rayon taffeta. Sad experience has taught him that applying water to such a taffeta often removes all the sizing from that portion of the garment, causing a very flimsy area and a bad case of yarn slippage.

In summation, the most common spots cannot be removed from fabrics that will not withstand a local application of water.

WETCLEANING —— Sometimes garments become soiled to such an extent that the dry-cleaning process does not adequately cleanse them. This is especially true in the case of white or light-colored garments, where a minute film of soil is very noticeable. In such cases it is necessary to resort to a water process of cleansing in order to return a bright, fresh garment to the consumer. We call this water process "wet cleaning". Wet cleaning also becomes necessary in the event that soup or a drink has spilled over a large area of a garment.

Dry cleaners do not like to wet-clean garments. It is an additional and costly process. The garment must first be measured, individually handled during wet cleaning, then dried, steamed and stretched back to the original measurements. It therefore takes 50% longer to press a wet-cleaned garment than a garment that was merely dry-cleaned. Moreover, in the event the fabric was not properly preshrunk and the dry cleaner cannot restore it to size, the situation is very difficult to explain to the consumer. She does not realize the extra expense of water cleansing and thinks he actually used a short cut. The usual reaction of the consumer is, "I sent it to be dry-cleaned, but he washed it."

Wet cleaning is usually done by handbrushing a garment with lukewarm water and a neutral soap or synthetic detergent. Here again, the operator must know what various fabrics, and especially colors, will not withstand. Preliminary tests are often made on an unexposed seam of the garment to show under what conditions the color will bleed. For example, if a color is found to bleed in a soap solution having a pH of 9 or 10, it often can be successfully wet-cleaned in a more nearly neutral solution of a synthetic detergent, or a synthetic detergent solution made slightly acid. This is especially true of gabardines.

Fabrics that have not been completely preshrunk present a problem in wet cleaning. Rib-weave fabrics, such as some failles and bengalines, fall into this category, as well as many women's raincoats. Wool fabrics usually can be restored to their original measurements. A wet cleaner knows that factors such as heat, alkalis and mechanical action cause wool felting, and he does not subject wool to them.

The percentage of garments that require wet cleaning varies in different localities and in different seasons of the year. Often 10% of the dresses processed require wetcleaning, but this percentage is smaller in the case of wool garments. However, any white or light-colored garment will probably require wet cleaning sometime during its normal wear-life.

PRESSING——The final step is pressing, a process we in the dry-cleaning industry call "finishing". Wool suits are pressed on a steam pressing machine, which most of you have probably seen. Pressing also requires considerable skill. A good presser will not shine gabardines

or blue serges and will put the original shape back into a coat. The method we teach for properly pressing a man's coat requires 22 separate lays on the press. Don't expect to get all this at a low selling price for pressing is a costly operation. Although there are many things that contribute to the quality of a drycleaning job, the price paid for dry-cleaning a suit is usually a function of the time allowed for pressing it.

Women's garments are finished on pressing equipment of various shapes and sizes. One of the most amazing things to a housewife visiting a dry-cleaning plant is the equipment used for pressing dresses.

The dry-cleaning industry does not have many fabric problems in the finishing department. The equipment is designed to handle all the popular fibers. Although 25 years ago a dry cleaner would have refused acetate garments, today a plant that could not properly process acetate could not stay in business.

One trouble sometimes encountered in the finishing department is from buttons that lose dye when brought into contact with steam. When this occurs, the fabric adjacent to the button becomes stained. Unfortunately, the stain usually cannot be removed.

EXTRA SERVICES

MOTHPROOFING——Many dry cleaners offer additional services to obtain added revenue or to increase their business. One of these is mothproofing. Some mothproofing products used by dry cleaners are applied to garments by spraying; some are dissolved in the dry-cleaning solvent to make a treating bath in which garments are immersed; some are dissolved in water and then emulsified in the solvent. The latter type exhausts from the bath as the water is picked up by the garments.

Each year we test various mothproofing products sold to the dry-cleaning trade and publish the results to our members. We apply the product according to the manufacturer's directions to standard wool fabric and then subject it to the standard carpet-beetle test. If the manufacturer of the product claims fastness to dry cleaning, we dry-clean the fabric five times before exposing it to insects. Here we deviated somewhat from your joint specification, for, instead of dry cleaning in a jar, we do it in a regular washer. We use a cleaning procedure that usually removes from ¼ to 1/3 of the water-soluble soil on one cleaning. We have found instances where samples treated with products have failed after five such dry cleanings when the manufacturers had shown reports from testing laboratories stating that wool treated with these same products had been mothproof after 25 cleanings by the jar method.

WATER REPELLENTS —— Another service many dry cleaners offer is treatment of raincoats with a water repellent. The water repellent is dissolved in Stoddard solvent and kept in a separate tank. Often a steam line runs through the tank to warm the solution and thus to increase solubility of the repellent. Garments are immersed in the solution, then centrifuged and dried. As the repellents are not substantive, the solution is used over and over again. One of the industry's main difficulties on this score has been in obtaining a water-repellent treatment on raincoats of acetate rayon that will not cause them to mark on scratching.

We also evaluate water repellents sold to the dry-cleaning trade. Our treatments for evaluation are carried out on Type II, Class A, Army poplin meeting the joint Army and Navy Specification JAN-C-342. In evaluating products, we apply them not only to new fabric, but also to samples of the same material that have been dry-cleaned. Dry cleaners must dry-clean raincoats before they can retreat them. Often a minute film of soap remains on the fabric that makes retreatment less effective. The following table gives a comparison of products applied to new and to dry-cleaned fabrics:

SPRAY RATINGS OF VARIOUS PRODUCTS APPLIED FROM STODDARD SOLVENT

Product	*On New Fabric*	*On Dry-cleaned Fabric*	*Product*	*On New Fabric*	*On Dry-cleaned Fabric*
1	100	90	11	80	50
2	90	80	12	80	50
3	80	80	13	80	50
4	70	80	14	70	50
5	90	70	15	70	50
6	90	70	16	50	50
7	90	70	17	50	50
8	90	70	18	50	0
9	80	70	19	50	0
10	80	70	20	50	0
			21	50	0

We have seen many puzzling cases of color loss on acetate raincoats. At first we were unable to duplicate this loss of color, which usually occurred in the water-repellent bath. We tried various water repellents, tried increasing their concentration, and used them at excessively high temperatures; but no loss of color occurred. The colors also were usually fast to water. Finally, we found that a combination of water and dry-cleaning solvent bled the color. We believe the water swells the fibers and allows the solvent to bleed out the dye. If the fabric is wet out completely with water and then immersed in the solvent, there is no bleeding. However, if only a part of it is wet out and it is then immersed in a dry-cleaning solvent, bleeding occurs. Although the bleeding is slow, it is accelerated by raising of the temperature. With warm solvent considerable bleeding often occurs in 30 minutes. This has explained many of our cases of color loss. Repeated heating and cooling of the water-repellent solution has caused some condensation of water inside the tank, which is then picked up by one area of a raincoat. Moreover, the solvent is often used warm, and often garments are immersed in the bath and left there some time before the dry cleaner finds it convenient to remove them. We are preparing a bulletin which will warn our members about this type of color loss.

PROBLEMS

During the past few years we have been receiving from 70 to 80 cases per month of color loss around the neckline of dresses. Usually the consumer blames the dry cleaner. We suspected that cold-wave solutions were causing this trouble, so we purchased 10 popular brands and began investigating the problem.

Cold-wave sets contain two solutions. The first is a reducing agent—usually thioglycollic acid or its ammonium salt. The second is an oxidizing agent—either potassium bromate or sodium perborate. All three of the above solutions were applied to a variety of fabrics, but very little color loss occurred. However, after the fabrics were dried, they were pressed. This activated the residual material in the fabric and caused color loss on quite a few of the materials. Some consumers have complained that the color loss was not noticed until the garment was removed from the garment bag several months later. To investigate this point, the colored fabrics that were not affected by pressing were hung in a warm room to age. They have been hanging now several months and most of them have lost color.

Another trouble we see nearly every day is from bonded-wool shoulder pads. These consist of wool fibers bonded together by a thin coating of a synthetic rubber latex. On garments of acetate,

(Concluded on Page P744)

ONE HUNDRED AND SIXTY-EIGHTH GENERAL RESEARCH COMMITTEE MEETING

THE 168th meeting of the General Research Committee, held at the Swiss Chalet, Rochelle Park, N J, on Friday, September 28, 1951 was called to order at 4:40 pm by Leonard S Little, Chairman. In his introductory remarks, Mr Little referred to the fact that the Executive Committee on Research had held a meeting the previous evening and discussed the European developments. It was indicated that there may be a meeting of the International Standards Organization in June, 1952, at Columbia University.

Mr Rabold reviewed briefly what he had done in connection with the proposed Colour Index while in Europe last summer and referred to the fact that a committee to look into the purchase of paper for the Colour Index had been set up under the chairmanship of Mr Sampson.

Mr Appel referred to the gray scales currently popular in Europe for judging color differences and to other test methods, which, it appeared, could be reconciled with our similar methods. He pointed out that Europeans object particularly to the cost of our test equipment, but also noted that it has been made plain to them that it is the conditions of the test that are emphasized by us rather than the equipment in which the tests are run. As an example of some of the differences in end use requirements among the different countries, it was pointed out that in England wash in laundering is still boiled, though this is not the practice on the continent.

The meeting was then turned over to the Director of Research, Dr H W Stiegler, who stated that the International Standards material brought back by our representatives during the summer required considerable work on the part of the associates at Lowell in order to organize reconciliation tests. The large volume of data has been reviewed, he stated, and the differences are being evaluated at Lowell. It is expected that the membership of the General Research Committee will be circularized at an appropriate time in connection with these developments. Dr Stiegler further stated that it is the intention at Lowell to circulate test methods to the General Research Committee to permit consideration before the meeting at which voting is expected. In general, cards will accompany the methods to permit a mail vote in cases where it is impossible to attend the meeting. He again urged that these methods be studied and reports made by all those who receive the information. It was announced that the new Hoffman press and boiler, and also a cascade washer are due shortly. The finalized model of the Accelerotor is being made.

Subcommittee on Dry Cleaning — A E Johnson, Chairman, reported that meetings have developed the fact that much work is needed since the present test method does not always indicate the results to be found in commercial practice. As in the case of wash fastness, this committee, which consists of 25 members with a steering committee of seven, is trying to get a test which will be equivalent in effect to five commercial dry cleanings. Forty-two fabrics processed under a wide range of finishes have been tested at the dry cleaning laboratory in Silver Spring, Md and also at Lowell. At a recent meeting the steering committee reviewed the results obtained thus far and lined up further work to be done at Lowell in which work tests will be made using a solvent to fabric ratio of 10:1. Other factors, such as water content of dry cleaning soap, will also be investigated. It is expected that recommendations for a tentative test method will be formulated by the December meeting. (Cards showing the progress of this subcommittee's work were exhibited at the convention).

At this point, Dr Stiegler requested that committee members and chairmen spend some time around the AATCC exhibit at the convention, to make possible discussion with interested visitors on the exhibits. Because of restricted space at the convention, it was decided to show largely the newer items.

The extensive work done by Mr Seibert during the summer on sunlight exposure tests was lauded by Dr Steigler, who stated that a copy of Mr Seibert's report covering it will be distributed to members of the research committee.

He then stated that no decision had as yet been reached on the Philadelphia Section research project. It is his intention to circularize the committee members for suggestions as to appropriate subjects to be covered by this project.

Subcommittee on Simplified Control Tests—Dr T G Hawley, Jr, Chairman, suggested two test methods as tentative standards and gave a brief discussion of the supporting data. By vote of the committee the "Rapid Test Method to Indicate Color Fastness to 105°F Washing" was adopted as a tentative standard. Action on the "Combined Color Fastness and Shrinkage Equivalent to Five Commercial Launderings", following considerable discussion and some criticism, was held over until the next meeting to enable those interested to try this proposed method in their own laboratories.

Subcommittee on Dimensional Changes —J F Warner, Chairman, reported that two subcommittees are actively at work. The first, on the shrinkage test for wool socks, has recommended that we adopt the present U S Army test as an AATCC tentative accelerated test procedure, the details of which will be circulated to committee members to permit a vote at the next meeting. The proposed test method is said to produce results on shrink-resistant-treated wool socks that are in good agreement (as to shrinkage) with the results obtained when the same socks are given 20 commercial wool launderings or 20 launderings in automatic home-laundering equipment. The second subcommittee is working on shrinkage tests for knitted wool fabrics other than hose. They are developing a test (or tests) for determining the shrinkage of knitted woolens, e g, such items as underwear, sport shirts, blouses, sweaters, etc. Tests are now under way and regular progress reports will be made.

Subcommittee on Fastness to Washing— C A Sylvester, Chairman, reported that his committee does not like the proposed British gray scale to evaluate transference of color, and feels our AATCC color chart to be superior. They are, however, considering the use of the gray scale "B" for evaluating color loss. Some further work will be done to seek an application

of this gray scale. For the purpose of evaluating the new "III-A" test the committee presented a Standard #5, which is an 8 oz/gal dyeing of Jade Green; a Standard #3, which is an 8 oz/gal dyeing of Golden Yellow GK; and a Standard #1, which is a 2 oz/gal dyeing of Naphthol AS coupled to Fast Red Salt 2G. The committee is collaborating with the Revision Committee CS-59 hoping to unify their tests with our tests. Recommendations will be made with the Revision Committee.

Subcommittee on Chlorine Retention—A W Etchells, member of the committee, reported for Dr J Epelberg, Chairman. The committee is satisfied with their method and with their apparatus. They will circularize the members, proposing it is a tentative method. Six laboratories have agreed remarkably well in the tests. Two scorch test machines were announced available for testing purposes from Dr Epelberg at Cluett, Peabody & Co.

Dr Stiegler requested committee chairmen to follow present *Year Book* practices in writing up their methods for circulation.

It was announced that the next meeting will be held this Friday (November 16, 1951).

There being no further business, Mr Little closed the meeting at 6:25 pm.

Those present were:

L S Little, *Chairman*
H W Stiegler, *Research Director*
G H Schuler, *Secretary*

W D Appel	G D Jackson, Jr
M J Babey	A E Johnson
A Booth	J E Meili
H C Chapin	C N Rabold
C Z Draves	E W K Schwarz
A W Etchells	R B Smith
P J Fynn	C A Sylvester
H E Hager	A F Tesi
H C Haller	J F Warner
E Hansen	H E Wilde
T G Hawley, Jr	P J Wood
A E Hirst	H L Young
W A Holst	J A Zelek

Dry Cleaning

(Concluded from Page P742)

a color change often occurs on the used fabric similar to that caused by gas fading. Lining materials are usually deteriorated in the underarm areas.

We soon found that small amounts of hydrochloric acid were being given off by the shoulder pads—apparently from decomposition of the elastomer. At first we thought that dry cleaning was removing an antioxidant and that then the heat of drying could cause disintegration. However, repeated dry cleanings and dryings on new shoulder pads failed to reproduce any trouble of this type. We have had a man working on this rather baffling problem for over two months. However, the other day he found some of the pads that he had not treated but had merely left stored in a laboratory drawer had begun to deteriorate.

CONCLUSION

I have tried to explain to you how dry cleaning is carried out, and I have presented some of the problems that the drycleaning industry encounters. The National Institute of Cleaning and Dyeing is certainly grateful for this opportunity of presenting this information to this, the New York Section, of the AATCC.

—♦ ♦—

E T Duffy

Mr Duffy is the co-author of the paper "Continuous Stripping of Carpet-Yarn Waste", which appeared in the October 15th issue.

Dynel Fabrics

(Concluded from Page P738)

cotton dyes may be applied to dynel by acid-dyeing procedures. As in the case of the acid dyes, light fastness varies with the dyestuff.

SOLUBLE VAT COLORS——General Dyestuff Corporation has developed procedures for applying Algosols to dynel in a range of light and medium shades. These colors have very good fastness to light. They have good fastness to washing but are rated only fair to poor in resistance to crocking. These colors should, therefore, not be employed in applications where crock fastness is an important consideration.

VAT DYES——Progress has been made in the application of vat dyes to dynel, and heavy, light-fast colors with good fastness to washing have been obtained. At present these colors have poor fastness to crocking.

PIGMENT COLORS —— The Calco Chemical Division of American Cyanamid has developed a line of resin-bonded pigment colors for dynel. The excellent light fastness of these colors is realized on dynel. This company is prepared to undertake color matching and development-scale runs.

We would like to conclude with the note that progress in the dyeing of dynel continues at a rapid pace and many new developments may be expected.

SOURCES

(1) Calco Chemical Division, American Cyanamid Company, Bound Brook, N J.

(2) General Dyestuff Corporation, New York, N Y.

(3) Gallowhur Chemical Corporation, New York, N Y.

(4) Carbide and Carbon Chemicals Company, Division of Union Carbide & Carbon Corp, New York, N Y.

Calendar of Future Meetings

COUNCIL: Nov 16 (Hotel New Yorker); Jan 18, 1952; April 18, 1952; June 20, 1952; Sept 19, 1952 (all in New York); Nov 6, 1952 (Boston).

GENERAL RESEARCH COMMITTEE: Dates and sites are the same as the Council's.

NATIONAL CONVENTIONS: 1952—November 6-8, Boston, Mass; 1953—Sept 17-19, Hotel Stevens, Chicago, Ill; 1954—Atlanta, Ga.

HUDSON-MOHAWK SECTION: Dec 7, Feb 1, 1952, Mar 21, 1952, May 2, 1952 (all at Jack's Restaurant); June 20, 1952 (Annual Outing).

NEW YORK SECTION: Nov 30 (Swiss Chalet); Jan 11 (Hotel New Yorker); Feb 29 (Hotel McAlpin, New York); April 18 (Swiss Chalet); May 16 (Swiss Chalet); June 20 (Outing).

NORTHERN NEW ENGLAND SECTION: Nov 30 (Annual Meeting, Boston, Mass), Jan 25 (Boston); Mar 7 (MIT); April 18 (LTI); May 16 (Andover Country Club); June 6 (Annual Outing, Merrimack Valley Country Club); Dec 6 (1952 Annual Meeting, LTI).

PACIFIC SOUTHWEST SECTION: Jan 11, 1952; March 28, 1952.

PHILADELPHIA SECTION: Dec 7, Jan 18, 1952 (both at Kugler's Restaurant, Philadelphia).

RHODE ISLAND SECTION: Nov 16 (Johnston's).

SOUTH CENTRAL SECTION: Dec 1 (Hotel Patten).

SOUTHEASTERN SECTION: Dec 8 (La Grange, Ga).

WESTERN NEW ENGLAND SECTION: Dec 14 (Rapp's Restaurant, Shelton, Conn).

A TENSIONING DEVICE FOR USE WITH THE TABER ABRASER

MARGARET HARRIS ZOOK

Ellen H Richards Institute
The Pennsylvania State College

This is the sixth in a series of reports on methodology studies relating to the testing of textile fabrics for resistance to abrasion, from the laboratories of the Ellen H Richards Institute, sponsored by the American Viscose Corporation.

INTRODUCTION

Undoubtedly there is a personal equation in conducting an abrasion test on textile fabrics with the Taber Abraser, which is related to the degree of care with which a fabric is mounted on the turntable of the apparatus. Some operators have been seen to exercise extreme care in the application of tension in mounting the samples and in smoothing the test samples in preparation for a test, while others have appeared careless in these respects.

In order to insure standardization in mounting test samples on the aforementioned abrasion machine, a device was built under the direction of the author in the shops of the School of Chemistry and Physics, The Pennsylvania State College, which was designed so that a uniform tension could be applied in mounting a test specimen preparatory to making an abrasion determination.

METHODS OF PROCEDURE

CONSTRUCTION OF TENSIONING DEVICE——Figure 1 shows the tensioning device as completed. This consists of a 13.5-inch metal table standing 6.25 inches high. From a 9.25-inch square opening in the center of the table drops a support upon which the Taber Abraser turntable can be placed for mounting the fabric. When the turntable is in place and the fabric is over it, the latter is level with the table surface. Four free-sliding spring clamps, each 5.25 inches in length, are located one on each side of the square for gripping the fabric. To each clamp is attached a nylon wire, which extends over the wheels located at the outer edges of the table; to each of these, a 9.5-ounce weight is attached. This arrangement makes it possible to stretch the test swatch taut with a standard tension before placing the ring clamp on the turntable.

PROCEDURE FOR MOUNTING THE FABRIC——The following is the procedure for mounting the fabric in the tensioning apparatus:

(1) The turntable is placed on the center support;
(2) A seven-inch square of fabric with the usual center hold is placed over the turntable extending onto the table surface; then the center washer and nut are screwed into place;
(3) The fabric is secured in the grips of the free sliding clamps which then are located one-half inch from the edge of the center square, and free from the effects of the hanging weights which are placed upon the table at this stage of the mounting process;
(4) The weights then are lowered, first with the two stretching the warp direction simultaneously and then with the other two stretching the filling;
(5) The loosened ring clamp is placed quickly over the turntable and tightened with an Allen wrench;
(6) The clamps then are released and the mounted fabric is ready for the abrasion process.

DISCUSSION OF FINDINGS

From preliminary work with and without the use of the above-described tensioning device, there are indications that more uniform results can be obtained with replications of an abrasion procedure in which the test swatches are mounted with the uniform tension provided by this accessory equipment than is the case when samples are mounted by hand.

Although the surface characteristics of test fabrics underwent some change by virtue of the uniform tension applied during the mounting operation, the relationship of strength losses in the different abrasion and test directions tended to suffer no change.

Further study is in progress on the results obtained with different technical workers using the Taber Abraser with and without the tensioning device as described. Results of these practical trials will be set forth in a later report.

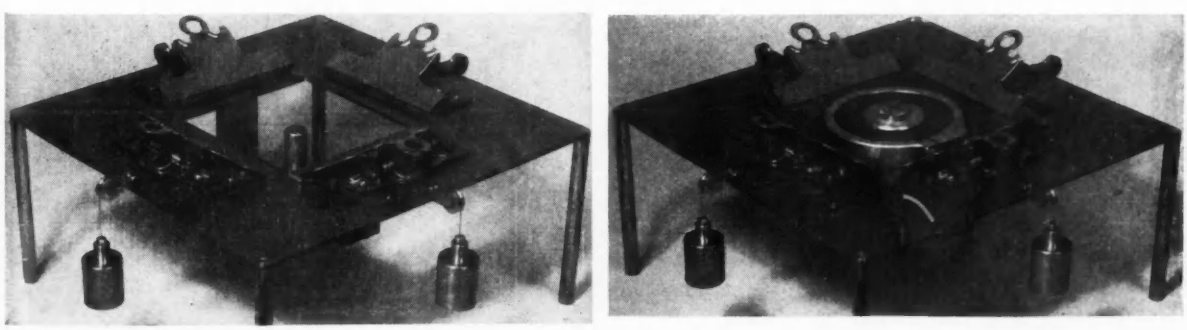


Figure 1

Tension Device (Left) Before a Test Sample Is Mounted; (Right) After the Test Sample Has Been Mounted.

SUMMARY

This new tensioning device is designed to insure the application of uniform tension to a textile fabric specimen while mounting it preparatory to an abrasion determination using the Taber Abraser. Preliminary results indicate that some of the variation in abrasion tests may be eliminated by the use of such a device.

ACKNOWLEDGMENTS

The author is indebted to the Ellen H Richards Institute and to the American Viscose Corporation for the opportunity of being associated with the research studies on accelerated aging tests for rayon being conducted under their joint auspices.

The author is especially indebted to Charles W Brouse, Shop Superintendent, School of Chemistry and Physics, for assisting in the designing, and for supervising the building of the tensioning device used in this study.

Book Reviews

ARTIFICIAL FIBRES

R W Moncrieff
313 pages; $4.50
John Wiley & Sons, Inc, 1951

This latest contribution to the literature on artificial fibers comes from England, and is a five part treatise devoted to fiber structure, manufacture and properties of the three classes of artificial fibers and processing. Part I covers the structure and properties of fibers, and treats succinctly such topics as fiber structure, orientation, crystallinity, and the influence of physical and chemical structure on fiber properties. This section, although just sixty pages, very nicely presents the fundamentals and highlights of modern fiber physics.

Part II deals with regenerated cellulose and alginic fibers. In this part the history of rayon manufacture is outlined, and a detailed descriptions of the methods used in making viscose, cupra, and cellulose acetate fibers given. The physical, chemical, and dyeing properties of these fibers are also treated comprehensively. Also, there are chapters devoted to a short discussion of the high tenacity regenerated cellulose fibers, and a very interesting discussion of the alginate fibers, which have attained some degree of importance in England.

Part III is a very short section comprising some twenty pages and is given to the artificial protein fibers. Quite properly the longest chapter in this part details the manufacture and properties of Vicara. However, peanut fibers, soybean fibers, and from a historical viewpoint, casein fibers are not neglected.

Part IV gives broad coverage to the synthetic fibers. Details of fiber manufacture, chemistry, and properties of the many various synthetics are given to varying extents. Among the fibers treated in this section are the familiar nylon, Vinyon, Saran, Orlon, and glass together with less familiar fibers such as Perlon, Terylene, and PeCe. The discussion of nylon is quite complete. Details on Orlon apparently were not available when the book went to press, and du Pont's Dacron receives no mention, but the chapter on Terylene applies in principle to Dacron.

Part V treats processing of artificial fibers. Included in this section are chapters on staple fiber manufacture and use, delustering, dyeing, and identification and determination of artificial fibers. The chapter on staple fiber discusses methods of cutting and includes a discussion of crease-resistant finishing. The chapter on dyeing is supplementary to the discussion of dyeing properties given under the particular fibers. Primarily it is a general treatment of some of the practical aspects of artificial fiber dyeing and is quite elementary. The final chapter on identication and estimation is of little value, because there are many better sources of analytical information.

This book provides good reading. It should prove to be particularly useful as a college text in its area. Each chapter contains a bibliography of suggested further reading that will be especially valuable to the student. It will also find use as a reference book because of its detailed descriptions of so many of the artificial fibers.—JBM

TEXTILE UNTERSUCHUNGEN

M Nopitsch
In German, 322 pages, 32.50 D M
Konradin—Verlag, Stuttgart

The text by Dr Ing M Nopitsch presents an excellent contribution to the textile field. The book is divided into two parts: "Methods of Analysis", and "Defect Investigations".

Sensory, optical, microscopic, photomicroscopic, chemical, and physical procedures are presented under "Methods of Analysis". Fundamental and advanced techniques are submitted for each method. This section contains the "tools" necessary to the technician for routine mill controls, manufacturing, defect analyses, and garment-claim investigations. Fibers, yarns, woven goods, finished pieces, and dyestuffs for vegetable, animal, and synthetic materials are included.

The section devoted to "Defect Investigations" presents numerous completed analyses with photographs. The text is excellent. However, these particular photographs are not as conclusive as those contained in the book "Fabric Defects" by J B Goldberg. The author very sensibly closes this section with a remark which is liberally translated as follows: "Regardless of the methods available for the determination of the responsibility for a defect and its removal, nothing assists more than the close co-operation between the persons involved and the laboratory."

The author's literary style is to be commended. One very important feature is the use of clue words in the margin indicating the contents of the paragraph. This makes both general reading of the book and the seeking of a particular section, as in reference, considerably easier.

The appendix contains photographs of all the "Testing Equipment and Instruments" referred to in the text. They are indexed with a photograph number, which is employed wherever reference to the subject is made in the book. Also included are 148 photomicrographs, indexed as explained above, of fibers, both sound and damaged. These photomicrographs are excellent reference material though they are not as complete as the "Textile Fiber Atlas" of Von Bergen and Krauss.

The index is divided into three parts, each devoted separately to a main section of the text, and the third is for the "Testing Equipment and Instruments". This third section is also cross-indexed to give the page in the text which refers to the particular instrument.

This book is highly recommended for the wealth of information so logically available. From the student to the technical staff and the plant manager, it will assist in overcoming problems. The only exceptions to be made are based on the fact that the book is intended for the continent, and therefore some data are not in agreement with our conceptions. For example, in the section pertaining to animal fibers, a statement is made that Vicuna is an insignificant fiber, whereas our industry recognizes this fiber as the ultimate in quality.—Revd by Wm F Brommelsiek, Forstmann Woolen Co.

• PATENT DIGEST •

PRINTING DIRECT or ACID DYES——Fixation with Acid Soluble Cyanamide-Formaldehyde Condensates D, 2, 03

Brit Pat 652,985 (Courtaulds Limited—Cluley, Allen——May 3, 1951)

Neither direct nor acid dyestuffs printed with standard thickening pastes and steamed thereafter are sufficiently fixed on vegetable fibers. They have the tendency to bleed into the unprinted areas during the rinsing operation that follows.

It has been observed that the thickener can be removed after steaming without undue bleeding off by adding a *water-insoluble condensate* of cyanamide and formaldehyde plus a potentially acid salt to the paste; acid is liberated in the steaming process, e g, ammonium acetate or the like.

Water-insoluble cyanamide condensates have been described by the same company (inventor Whittaker) in Brit P 515,847. Cyanamide and formaldehyde react directly or better in aqueous solutions of pH 6-9. The more alkaline the solution, the more rapidly the condensate is formed and precipitated; however, the product becomes less soluble in acetic acid. Textiles impregnated with these acid solutions have a greater affinity to dyes. Examples are given in Brit P 515,847 for Chlorazol Fast Black BKS, Solar Rubinole B and Viscose Blue Grey NB.

The present patent refers to a printing process using these condensates. The necessary acid for dissolving the condensates is supplied in this case by the forementioned potentially-acid salts. Therefore the process differs essentially from known printing methods that employ resin condensates, which are cured by acids in an aging or steaming operation.

Example: Chlorazol Sky Blue FFS (C I #518) is solubilized with urea and pasted with gum tragacanth. Small amounts of ammonium formate and cupric acetate (the latter for improving the light fastness) are added. Rayon fabric, printed with this paste is steamed for 45 minutes at 100-102° C and rinsed. Prints of good washfastness are obtained.

Another example: printing is done with the acid dye Coomassie Violet R 150 (C I #698) under similar conditions to these above.

It can be assumed that the dye, presolubilized with urea, can be fixed more easily with the resin dispersion, which is solubilized by the acid formed in the steaming process and apparently retransformed into the insoluble state in the subsequent drying process where the volatile acid is removed.

PAUL WENGRAF

PRINTING NYLON WITH INDIGOSOLS——Nitroaromatic Compounds as Oxidizing Agents. D, 2, 04

U S Pat 2,554,881
(Ciba Ltd—Reichart, Schlumpf—May 29, 1951)

A simple method for printing superpolyamide fibers, especially nylon, is suggested in this patent specification. Printing pastes of the indigosol group quite generally contain catalysts, either ferro- or ferricyanides or vanadium salts, which impair the stability of the composition. These ingredients are omitted while sodium-m-nitrobenzene sulfonate, known by the tradename "Ludigol" is added as the sole oxidizing agent. Solubilized vat dyes of different constitution can be used in this process such as the indigosols of 4-4′-dimethyl-6-6′-dichloro thioindigo, dichloroisodibenzanthrone (Indanthrene Violet) or 4-5-benzo-5′-methyl-6′-chloro thioindigo.

Example: 50 p of indigosolized dye are dissolved in 40 p of glycerine plus 300 p of water and pasted with 500 p of starch thickener. 100 p of ammoniumthiocyanate 1:1 (as an acid liberating agent) and 10 p of sodium m-nitrobenzene sulfonate are added. A nylon fabric printed with this paste is steamed for ½ hour under slightly superatmospheric pressure, rinsed, soaped at the boil, rinsed hot and cold and finally dried. The same method can be applied to blotch printing and, with some modifications, to padding operations. Homologs of sodium m-nitrobenzene sulfonate or the corresponding ammonium salts can be used as well.

Among other references cited by the Patent Office:

USPat 2,406,586 (1946—Allied Chem & Dye): a dyestuff composition, which contains a polybasic acid ester of a leuco vat dye (i e, an indigosol) plus coffein (cf *Am Dyestuff Reptr 36,* 219, 1947).

USPat 2,145,193 (1939—National Aniline): a vat dye composition, containing a soluble salt of an acid alkyl ester of an inorganic polybasic acid, e g, sodium -n-butyl-amino ethyl sulfate.

Brit P 321,191 (1929—Standfast Dyers and Printers): an Indigosol (Indigosol Red RH) printing paste containing nitrite and a nitrobenzene sulfonate.

Am Dyestuff Reptr 34, P214, 1945 (Choquette) discusses the dyeing of nylon with indigosols at 195°F in an acid bath and developing in ammonium thiocyanate plus dichromate and acid.

DYEING APPARATUS —— Mechanism for Controlling Tension in Jigs. C, 6

U S Pat 2,557,185
(Celeanese Corp of America—Gibbs—June 19, 1951)

This specification states that one of the major problems in dyeing on a jig is the maintenance of a uniform tension during the entire procedure. Quite generally the braking force applied to the nondriven roller is sometimes too high, causing undue stretching, or too low, effecting a slackening of the material and distorting the structure of the fabric. Obviously permanent, gradual accommodation of the braking effect to the tension of the web would be very desirable.

The object of the present invention is to insert a "sensing element" in the path of the fabric, this device acting on the brake for the jig roll in such a way that greater tension of the material releases the brake to a certain extent thereby attaining an equilibrium position during operation to maintain a controlled uniform tension.

The fabric (13) wound on roller (11) runs, as shown in Fig 1, over various rollers (15, 19, 21, 22, 20, 16) to be wound on (12). Normally the "sensing element", i e, roller (23) fixed on rod (24), is held in position (full lines) by means of a helical spring (26). Excessive pressure of the fabric (dotted lines) forces the rod upward. Pin (51), fixed on rod (24), moves the disk (48) upwards thereby opening the needle valve (46) and permitting pressure fluid from a conduit (38) to flow through (41) and (44) to one side of the braking mechanism (28). Piston (31), connected with the piston rod (32) and brake (34), is pushed back to a certain extent and the brake is released until normal tension is again attained. The braking fluid is directed here to the left side of the mechanism (28). After the fabric (13) is wound on roller (12), the two-way valve (42) is rotated to connect conduit (43) with pipe (41), after which it acts on the right side of (28) in an analogous way.

Among other references cited by the Patent Office:

USPat 2,472,548 (1949—Wagner El Corp): an automatic tensioning device for reels in which a web is withdrawn from an idler roller, the movement of which is automatically controlled by a hydraulic brake.

USPat 2,469,004 (1949 — American Blower Corp): an apparatus for controlling the tension of a web or a strip by using fluid couplings, which provide a back tension control in a constant amount.

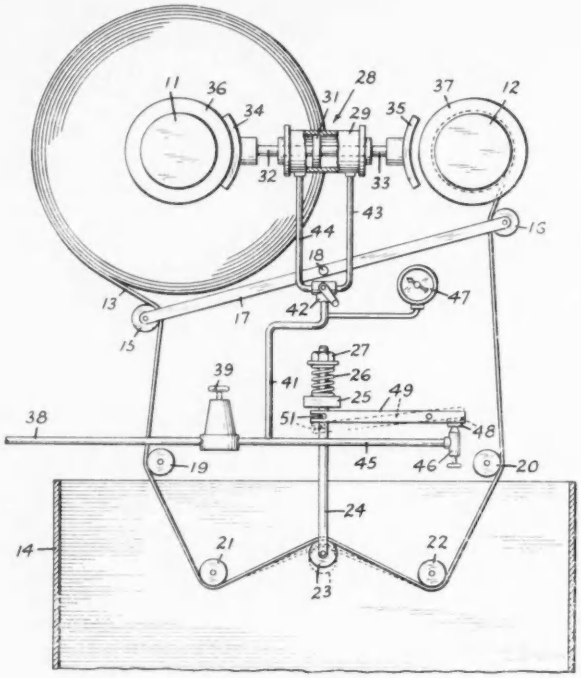
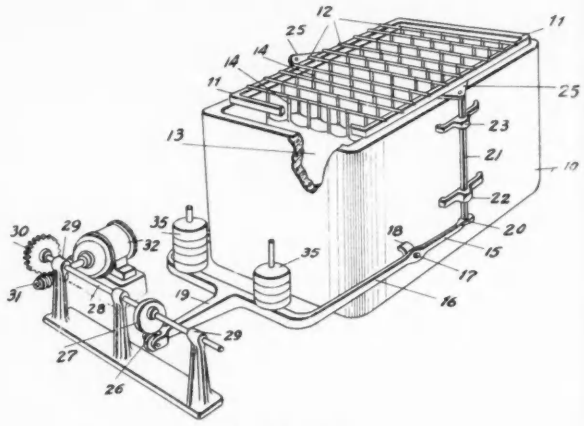


Figure 1—USP 2,557,185



USP 2,559,030

Reference is further made to Celanese's Brit P 470,415, which describes a jig fitted with an angular lever that contacts the surface of the fabric. In this construction, a decreasing volume of fabric gradually increases the braking action on the idler roller.

SULFUR DYEING COMPOSITIONS——Containing Lower Alcohols or Glycols. C, 5

U S Pat 2,558,245
(Du Pont—Grant—June 26, 1951)

Liquid sulfur dye compositions are superior to pastes or powders in preparing dye baths because all the necessary ingredients can be included in the commercial product. On the other hand, liquid sulfur dyes have the disadvantage of being more bulky, thus limiting the concentration and making it difficult to add further substances as required in the dyeing process.

The aim of this patent is to produce stable liquid, high-concentration sulfur dye preparations by dissolving the sulfur dye in any form (melt, filter cake, concentrated slurry, etc) in water plus a lower, water-miscible hydroxyaliphatic compound containing one to four C- atoms; lower alcohols or glycols are preferred. Sodium sulfide and sodium hydroxide are added in the amount required for the individual dyestuff. Sodium polysulfides are less desirable because of their tendency to deposit sulfur dust on the fabrics.

Example: 65 lbs Sulfur Black (C I 978) press cake of a 50% content on standardized commercial sulfur black are mixed with 25 lbs of sodium sulfide flakes (60%) and 6 lbs of water. This mixture is heated to 70—100°C until the dyestuff is dissolved. After cooling takes place, 4 lbs of methanol are added.

Hydroxyaliphatic compounds suggested in other examples include ethylene glycol or ethylene glycol ethyl ether.

Although the claims exclusively protect sulfur black preparations, the examples refer to Sulfur Navy Blue (C I 959) and Sulfur Tan (C I 948).

Among other references cited by the Patent Office:

USPat 2,130,415 (1939—Southern Dyestuff Corp): a sulfur dyestuff composition in which the dye is blended with sodium sulfide and sodium hydrosulfide, these ingredients being present at a ratio 1:1 to 2:1.

USPat 2,047,650 (1936—Du Pont): a vat color paste containing diethylene glycol.

USPat 1,987,583 (1935—General Aniline): a paste containing Indocarbon CL, glycerin and a hydrotropic salt (tetrahydronaphthalene sulfonate).

Reference is further made to USPat 2,038,591 (National Aniline) recommending black vat dye pastes containing alkylene glycols.

DYEING APPARATUS——Frame Oscillating in a Fixed Vat C, 6

U S Pat 2,559,030 (Rottier——July 3, 1951)

This specification describes a simple device for the dyeing (as well as scouring, bleaching, etc) of textiles; it is suspended by strings on a frame kept in permanent oscillating motion.

Frame (11), carrying a series of cross bars (12), is inserted in vat (10). The goods to be treated are suspended on these bars by strings (14). Frame (11) can be lifted or lowered by rods (21), ending in platforms (25). The up-and-down-movement is effected by levers (15, 16), attached to a central arm (19), which ends in a roller (26). This movement can be compensated further by weights (35) placed on the front end of the fork, which is formed by levers (15, 16).

Among other references cited by the Patent Office:

U S Pat 1,555,837 (Dudley/1925): a fiber treating apparatus comprising a tank in which skeins are suspended on sticks while the dyeing liquid is alternately moved up and down by a propeller mechanism.

U S Pat 1,532,707 (Mayoux/1925): skeins are suspended on frames which are mechanically moved up, down and (during the dyeing procedure) sidewise from one end of the dye vat to the other.

WATER REPELLENT FABRICS——High Substituted Monovinylsulfones G 2, 02

U S Pat 2,539,704 (U S Rubber Co——Schoene, Chambers——Jan 30, 1951)

This invention consists of a base catalyzed reaction of polyhydroxy compounds (polysaccharides) with alkylvinylsulfones . . . CH_2:$CHSO_2$Alkyl. It has been dis-

covered that the sulfones react in the presence of alkalis with these "hydroxylated polymers", such as starch, sugars, dextrine and cellulose. Products of different solubilities are formed, the shorter alkyl chains giving a more soluble reaction product; conversely, the solubility decreases with the increased chain length. For example, cellulose reacts with about one methylvinylsulfone mol per anhydroglucose unit to become quite water soluble. Solutions of this type might be used as textile sizing agents and for preparing artificial fibers or plastics.

Obviously this reaction might be used quite generally in all the various textile processes, but the most interesting application is in the field of water repellent finishes.

Example: scoured cotton duck is processed by first steeping it in 2% aqueous NaOH for one-half hour at 25° C. Excess lye is removed and the material is soaked in a benzene solution containing about 8% dodecylvinylsulfone. Finally, drying and curing take place in an oven for 15 hours at 55° C. The water repellency in this case is found to be very satisfactory.

Other examples point out means of preparing water-soluble or water-dispersible products by reacting the cellulosic (or starch) material with lower substituted vinylsulfones. This reaction can be carried out by first impregnating with the alkaline catalyst (as reported above) and then with the vinylsulfone solution (or the reverse). Also, the catalyst and the sulfone may be mixed under controlled conditions and the mixture applied to the substance to be treated.

Among other references cited by the Patent Office:

U S Pat 2,427,640 (Shell Development/1947): polymerized resins produced from esters of unsaturated alcohols with sulfonyl groups containing acids, e g, diallyl diisopropylsulfone dicarboxylate.

U S Pat 2,422,000 (Eastman Kodak/1947): sulfoalkylethers of cellulose prepared by reacting the fibrous material with carbylsulfate . . . CH_2 SO_2-O-SO_2-O.CH_2 . . . or ethionic acid in pyridine to obtain water soluble sizing agents.

U S Pat 2,103,879 (I G Farben/1937): organic vinylsulfones (e g, dodecyl vinyl sulfone) solubilized with bisulfite, the alkali salts of which are water soluble compounds recommended as textile assistants.

U S Pat 2,069,774 (Du Pont/1937): delustering rayon by appling emulsions of aromatic sulfones, e g, naphthylphenylsulfone or the corresponding sulfoxides (SO_2 radicle of the sulfones being replaced by the SO- group).

Further reference is made to Brit P 464,860 (I G Farben/1937) also French Pat 809,289, which recommend waterproofing of textiles by impregnating with emulsions of vinyl esters of higher fatty acids, and heating to 100° C.

MERCERIZING——Pretreatment with Halogenated Hydrocarbons A, 6, 02

U S Pat 2,549,713 (Research Corp, New York ——Seiberlich——April 17, 1951

Many mercerizing assistants that cause speedier penetration of cellulose fibers by caustic are known, cresol-, naphthol- and naphthenic acid derivatives solubilized with alcohols or hydroaromatic compounds predominating. This patent specification indicates that good results in the processing of cellulose with alkalis can be expected by soaking the goods in liquid halogenated hydrocarbons of a chain length not over C_3. Examples are: carbontetrachloride, pentachloroethane, trichloroethylene, etc. The material is pretreated for about 5 minutes in one of these compounds and then in an 18% NaOH solution. The amount of NaOH adsorbed is said to be highest after a trichloroethylene pretreatment, and lowest after a water pretreatment.

Among other references cited by the Patent Office:

U S Pat 2,232,926 (Dow Chemical/1941): alkali celluloses, reacted with an etherifying agent, e g, "Lorol" bromide (bromide derived from coconut fatty alcohol), ethyl- or benzylhalide, to produce various cellulose ethers.

U S Pat 2,172,242 (Eastman Kodak/1939): solvents in cellulose etherifying processes are cyclic and straight acetals (e g, ethylene formal in ethylchloride). These are applied on alkali pretreated cellulose.

U S Pat 2,084,833 (Berl/1937): highly acetylated cellulose, prepared by first hydrolyzing cellulose with acetic acid in the presence of sulfuric acid as a catalyst at low temperatures and then acetylating with acetic anhydride in the presence of a swelling agent.

U S Pat 847,658 (Arabol Co, Drittler/1907): producing cold swelling starch by mixing the dry commercial product with a suitable amount of a liquid hydrocarbon and then adding caustic alkali. The action of this liquid hydrocarbon, e g, crude paraffin oil, on starch granules is said to be merely that of making the epidermis of the starch granules elastic and permeable.

U S Pat 847,985 (Arabol, Drittler/1907): treating starch with solvents, e g, CCl_4, instead of paraffin hydrocarbons.

No theoretical explanation of this phenomenon has been offered. It can be assumed however that the pretreatment with chlorinated hydrocarbons has the effect of removing alkali-insoluble substances such as vegetable waxes, which otherwise obstruct the penetration by alkalis.

DYEING CELLULOSE ACETATE STAPLE FIBERS——High Concentrated Alcohol Solutions C, 4, 07

U S Pat 2,552,807 (Celanese Corp of America ——Normand, Cramer——May 15, 1951)

Cellulose ester dyeing liquids, containing dilute alcohols and thiocyanates as swelling agents, have frequently been described. It has been observed that these methods give unsatisfactory results when applied to fabrics composed of acetate rayon staple fibers. The ends of these fibers, which project from the woven or knitted fabrics, are generally dyed a deeper shade than the main body.

The present invention points out the fact that this nonuniform result might be caused by uneven penetration and suggests that the dye be applied from a substantially nonaqueous alcoholic bath in contrast to earlier methods, which suggest the use of dilute alcohols and thiocyanates as swelling agents (cf, e g, U S Pat 2,511,108, Celanese, *Am Dyestuff Reptr* 39, 926, 1950).

The dyestuff (either acetate or acid) is dissolved in 95% ethanol or other lower alcohols up to amylalcohol. Theoretically the 100% concentrated product could be used, but obviously its price is prohibitive. After padding, the cloth is skyed and dried, whereby the solvent evaporates, and is finally passed through a wash box. The shade produced is said to be even and deeper than that obtained in standard dyeing procedures.

Among other references cited by the Patent Office:

U S Pat 2,384,001 (Brit Celanese/1945): dyeing with aminoanthraquinone dyes, otherwise sensitive to gas fumes, from mixed solutions of ethanol and acetone.

U S Pat 2,344,973 (Celanese/1944): dyeing cellulose acetate with acetate or acid dyes from aqueous alcoholic solutions containing *at least* 70% ethanol (or lower alcohols) and rapidly drying.

U S Pat 2,344,974 (Celanese/1944): same as above except for an additional topping of the material with an alcohol-free dyebath.

Brit P 528,450 (Brit Celanese/1940): dyeing of cellulose acetate goods by immersion in solutions of acid or acetate dyes in mixtures of ethylacetate (or similar esters) and low alcohols.

The present method is principally concerned with dyeing acetate rayon *staple* fibers.

ABSTRACTS

Fiber Roughness and Fabric Soiling.

A J Hall, *Textile Mercury & Argus* 125, 67-71, 111-14, July 13 and 20, 1951.

In recent years many properties of textile fibers have received close attention, but one property which has been somewhat neglected is fiber surface roughness. The degree of roughness or smoothness of a textile fiber can play a large part in determining the usefulness of a yarn or fabric. In some cases it is beneficial for the fibers to be rough, and in others it is better that they should be smooth; it all depends on the characteristics which the yarn or fabric is required to have.

Fiber roughness influences the handle of a fabric, the strength of a yarn, the behavior of fibers during spinning into yarn, yarn and fabric luster, dyeing properties, the tendency or lack of tendency of a fabric to fray or slip, and last but not least, the readiness with which a fabric or garment picks up dust and dirt and becomes soiled.

With the natural fibers, man has but little control over their surface roughness. We expect real silk fibers to be smooth and wool fibers to be very rough, with cotton fibers somewhere between. In general the finer types of fibers are smoother than the coarser ones.

Unmercerized cotton fibers are ribbon-like with thickened edges and a surface which is usually indented with small holes or "pits" and a number of longitudinal striations. Particles of dirt cling to cotton fibers in these pits and striations. Cotton fibers are also twisted, and these twists serve to give the fibers added roughness and a greater tendency to pick up dirt. This is especially noticeable at the neck of a man's shirt.

When cotton is mercerized by treatment with caustic soda of about 50° Tw the fibers swell so as to become cylindrical. At the same time they untwist and lose most of their indented striated structure. The result is that they become smooth and rod-like. A shirt made from mercerized cotton fibers shows a much diminished tendency to become soiled.

Wool fibers are very rough and they easily pick up soil. This is because the ordinary wool fiber is covered with innumerable epithelial scales; the protruding scale edges give the roughness and dirt can readily be entrapped by these edges. When wool materials have been given an unshrinkable finish, e g, by treatment with chlorine, this fiber roughness is largely eliminated either by a streamlining of the scales or by removal of them altogether. The fibers then become smooth and no longer readily entrap dirt particles.

In dyeing processes the nature and extent of the fiber surface in the material being dyed can play an important part. For example, viscose and cuprammonium rayons can be produced with either an indented or a smooth circular cross-section. Experience has indicated that the indented type of rayon dyes deeper than the circular type. It is for this reason that the conditions of spinning viscose rayon are controlled to give filaments having a marked indented cross-section.

In the dyeing of cotton-acetate mixtures, when the fabric contains unmercerized cotton, there is often a tendency for the cotton to become stained with the acetate rayon dye——this is more noticeable in dyeing so as to leave the cotton white. The relatively coarse particles of the acetate dye have a tendency to cling to the rough surface of the cotton fibers. When mercerized cotton is used in these mixtures, dyers find it easier to leave the cotton white, because the fibers are smoother.

When fabrics containing wool and acetate are similarly dyed, the staining of the wool can be considerably greater than experienced with cotton, and no doubt this is due to the greater roughness of the wool fiber.—WHC

The Copper Technique for Dyeing Acrylonitrile Fibers.

T A Feild, Jr, and G H Fremon, *Textile Research J* 21, 531-9, August, 1951.

As in the case of acetate rayon, the problem of dyeing has claimed a considerable amount of attention during the course of development of acrylonitrile fibers, of which Dynel, Vinyon N, Orlon, and Acrilan are prominent examples. Although on the basis of early experience the problem appeared quite formidable, it has actually turned out to be much less difficult than it was in the case of cellulose acetate, for example. It is possible to obtain acceptable results with dyes designed for wool, for cotton, and for cellulose acetate, and it has not been necessary to create new dyes specifically for the acrylonitrile fibers. These fibers behave differently from the more familiar natural fibers and rayons, however, and it has been necessary in some cases to develop special techniques in order to obtain results that are commercially satisfactory.

In general, acrylonitrile fibers have greater "natural affinity" for the dispersed acetate dyes than for water-soluble dyes. However, it is necessary to use higher dye-bath temperatures than are customary in the case of cellulose acetate—hence the use of temperatures in the neighborhood of 210°F for dyeing Dynel, for example, and above 212°F for dyeing polyacrylonitrile fibers.

In cases where higher temperatures alone do not yield deep enough shades, it is possible to loosen the molecular structure of the fiber further by using certain selected solvents or swelling agents. Many potential swelling agents have been studied during the course of development of Dynel and Vinyon N fibers, and p-phenylphenol has been adopted as the most suitable for commercial use.

The absorption of many acid and direct dyes by acrylonitrile fibers can also be enhanced by using swelling agents. In the case of these water-soluble dyes, however, absorption by the hydrophobic fibers is so low that it is difficult—often impossible—to obtain deep shades by employing this device. It was in connection with efforts to improve these results that the surprising effectiveness of dissolved copper as an aid to dyeing was discovered.

Further study of the phenomenon revealed that copper enhances the pickup of a wide variety of dyes, whether it is present in the dye bath in the metallic form or as dissolved cupric or cuprous salts. Of the three, dissolved cuprous salts, prepared by interaction in the dye-bath between cupric sulfate or acetate and any one of a wide variety of reducing agents—dextrose, for example—appears to be the most effective. It was also found that copper is a dye assistant in its own right, not merely a promoter for dye assistants that act by swelling the fiber, and that this "copper technique" is specific to acrylonitrile fibers and is most effective with acid, direct, and soluble acetate dyes. Moreover, it was established that copper is beneficial only if the fabric is exposed to the copper solution before or during dyeing.

The experiments reported in this paper represent an exploratory effort to determine the magnitude of the copper effect, and to arrive at some plausible explanation of the mechanism involved. Of the several hypotheses that have come to mind to explain the effect, only one, which postulates the formation of a "bridge" between the fiber molecule and the dye molecule, appears to stand up in the face of the information available.—WHC

Apparatus for Evaluating Warmth of Textile Fabrics.

J D Tallant and R K Worner, *Textile Research J* 21, 591-6, August, 1951.

A semiautomatic apparatus requiring minimum operator attention has been assembled for measuring the thermal transmission of fabrics while subject to moving air at constant temperature. The apparatus, which is described in detail, was designed for ranking the insulating value of experimentally developed cotton fabrics. It measures electrically the heat transferred during a fixed time interval from a cylinder maintained at approximately body temperature in an atmosphere of moving air of approximately freezing temperature, with and without the cylinder being covered with a sleeve of the test fabric. The difference in energy values is taken as the measure of the insulation value of the fabric.

Conditions have been set up with an air velocity of 12 to 13 mph so that performance under fairly severe conditions of use can be approximated.

The literature on the thermal properties of fabrics is complicated by the use of various units for expressing results. With this apparatus, results are obtained in watt-hours and are expressed as "thermal efficiency". Formulas are given for converting to other units as desired.

The apparatus has been tested with a variety of fabrics ranging from thin, plain-weave, nylon cloth to heavy woolen blankets, and has been found to differentiate among them in a manner that apparently takes into account the various fabric properties.—WHC

Package Dyeing of Synthetic Fibers.

G T Douglas, *Canadian Textile J* 68, 53-5, 57, 59, August 3, 1951.

Package dyeing relates to a pack or bundle of fibers in the loose or in yarn form which is held stationary and in which the dye liquor is circulated through the interstices between the fibers until dyeing is completed. Packages may be in the form of cops, cones, cheeses or beams, all of which are produced by winding yarn on a spindle, the package being built up from internal to external surfaces.

The cake is unique in package form, and here the exterior of the package is formed first, being built up towards the interior by running the yarn into a centrifugal box. Hanks of yarn may also be placed in a basket arrangement to form a pack. The fiber need not be in yarn form, and it is common practice to dye loose staple fiber either in a perforated container or on beams and also as sliver and tops.

From a dyeing viewpoint, the most difficult proposition is beam dyeing, as beams are parallel wound and the density of such packages is high. There is no reason, however, why dyers' beams should not be cross-wound, and it is the opinion of the author that an enterprising machinery manufacturer could construct the necessary apparatus to make life very much easier for the warp beam dyer.

The denier of the fiber and the denier of the yarn play most important parts in package dyeing. The finer the denier, the denser the package and the greater the resistance to liquor flow due to the smaller spaces between the fibers. Fine yarns must therefore be wound for package dyeing with less tension than coarse yarns.

In yarn packages the tension of the yarn should be uniform throughout and held at a minimum conducive to package stability. The density of the package must be correct for the particular yarn being wound; for example, viscose rayon packages should be less dense than cotton ones on similar yarn counts to allow for the swelling of the viscose rayon on wetting out. Nylon is a highly extensible fiber, and filament yarns, if wound with any appreciable tension, relax and contract in the package form and the whole tightens and becomes more dense.

Package dyeing machines can be conveniently divided into three types, viz, open, closed, and pressurized. In the open type of machine the packages are held in a container which is directly open to the air; in the closed type the container is covered but there is an expansion tank in the circulating system. The pressurized type is entirely closed during running, and superatmospheric pressures can be obtained in such a system, and of course, temperatures of over 100°C. Realization of such temperatures gives greater flow through the package, better leveling and penetration, and in certain cases improved wet fastness properties of the dyed fiber.

The author classifies a number of direct dyes as to suitability for dyeing viscose rayon yarn in these machines.

It is generally agreed among dyers that the Abbot-Cox process was *the* outstanding step in the dyeing of viscose rayon cakes with vat dyestuffs. This process consists of applying the vat pigment in finely dispersed form in the presence of a nonionic dispersing agent and circulating the vat suspension through the rayon cakes. The dispersion is held at a temperature of 85-90°C, and salt solution is added to effect exhaustion onto the viscose rayon cakes. Towards the end of the pigmentation process the temperature is allowed to drop; the requisite amounts of caustic soda and hydrosulfite are then added to the bath, and for dyes which are stable to high temperatures, reduction is carried out at about 75-80°C. For those which are liable to decompose or change their form a temperature of 60°C is recommended.

A study has been made of the restraining effect of the nonionic dispersing agent on a number of leuco vat dyes, which the author classifies according to sensitivity.

Dyeing of the azoic dyestuffs to obtain shades fast to rubbing is particularly difficult. The author makes a number of suggestions which he states will minimize this defect.

The article concludes with a few comments on the dyeing of acetate rayon and nylon.—WHC

A New Method for Raw-Wool Scouring and Grease Recovery.

W Fong, A S Yeiser, and H P Lundgren, *Textile Research J* 21, 540-55, August, 1951.

Raw wool is contaminated with 40 to 70% of extraneous matter, of which 5 to 20% is suint, 10 to 40% is "grease" (more correctly, wax), and the remainder is sand, dirt, vegetable matter, urine and fecal matter. The primary objective in scouring is the removal of these impurities, leaving a white, nonfelted, ash-free product that contains around 0.5% of residual grease.

Wool suint is generally regarded as water-extractable material, presumably secreted by the sweat glands of the animal. It consists in part of a mixture of potassium soaps of fatty acids, ranging from valeric to palmitic acids.

The primary objective of the present investigation of the raw-wool scouring process has been to evaluate some of the underlying physicochemical principles involved in the cleaning operation as the basis for possible improved technical practice. These studies are directed toward the effect of the scouring treatment on fiber properties, as well as the problems of effluent disposal and grease recovery.

As a first consideration, the role of suint in the scouring process was investigated. The detergent properties of suint salts in scouring are recognized; however, it appears that suint salts have never been used to their fullest effectiveness.

The results of this investigation indicate that the emulsifying power of suint is enhanced markedly by the addition of alcohol and salt. These experimental results have provided the basis for the demonstration, on a limited laboratory scale, of a continuous alcohol-suint scouring process for raw wool, under neutral conditions, with the simultaneous recovery of grease. n-Butyl alcohol has been intensively studied because its properties

seem particularly suited to the process. A 3% solution is optimum for scouring. Further addition of alcohol to about 7% concentration, saturating the water, causes the scouring emulsion to break and the grease and dirt to separate. The alcohol concentration is then readjusted by distillation and the solution used again for scouring.

The interaction between suint and alcohol which produces the results reported above may be interpreted either by an analysis of the interfacial relationships involved or by a consideration of the effect of alcohols on micelle structure.

Some of the advantages claimed for the new process are: less damage to the wool fiber, effluent clarification, and economy. —WHC

Survey of Textile Finishing

R A McFarlane, *Dyer* 106, 165-170, 229-235, August 10 and 24, 1951.

There is a vast number of finishing processes; some appear to be part of the structure of the textile finishing industry, probably due to the fact that they meet the more basic requirements, such as mercerizing, waterproofing, tentering and calendering. Other processes are introduced, used over a period of time, and then are discarded for various reasons.

The number of finishing processes is constantly increasing; new processes are being introduced for a variety of reasons, such as the introduction of new fibers, the result of research (e g, permanent glaze), and the need of meeting customer requirements or Government specifications.

There is a tendency to consider the scope and limitations of textile finishes in terms of mechanical equipment. The machines available, their control and adaptability must be factors, but there are others, and probably the most important are the physical and chemical properties of the fibers and yarns from which the fabrics are made. Fibers are poor substitutes for one another; each possesses properties which are characteristic, and consequently they can be used only to a very limited extent in place of one another. Similarly, it is extremely rare that fabrics made from different fibers can be processed to give the same finish. The shape of the fiber cross-section has a marked effect on the hand of a fabric; thus, the round cross-section of nylon imparts a smoother hand than the irregular cross-section of viscose rayon. Further, the refractive index of a fiber can have a marked effect on the appearance of a fabric, and particularly its luster.

There are many other physical properties which differ from fiber to fiber. Examples are tensile strength, elongation when stretched, water absorption, resilience, plasticity, inflammability, electrical and thermal conductivity, and softening and melting points. The chemical nature of the fiber also has a marked bearing on the fabric properties.

The function or purpose of textile finishing processes is, in the main, threefold, namely:

(1) to dry and bring the fabric to the correct dimensions, and leave the filaments or hairs of the yarn in the required state and position, i e, together or apart, lying relatively flat or with an appreciable degree of crimp.

(2) to take advantage (and account) of the physical properties of the fiber or fibers and fabric.

(3) to modify these properties by chemical means to counteract their "shortcomings" for the specific purpose for which the fabric is required; this must be accomplished within the scope and limits of the physical and chemical properties of the individual fibers.

The dimensions of the fabric, and the state and position of the filaments or hairs of the yarn, are determined by reference to three main requirements—type of fabric, customer's preference, and serviceability of the fabric for the purpose for which it is intended. There are big differences in the finishes required for different types of fabrics, e g, cotton shirtings, linen sheeting, wool suiting, acetate taffeta, etc.

The drying processes are of the greatest importance, and have a marked effect on the finish. Fabric must not be allowed to dry locally before processing and should not be dried too quickly or overdried, and throughout, the warp tension must be kept to a minimum.

Fabrics made in the same construction, but from different fibers, react differently to the various finishing processes. This is particularly the case when the nonthermoplastic fibers, such as cotton, linen, and viscose, are compared with the thermoplastic fibers, acetate, nylon, and Vinyon. Discussed in terms of machines, the main factors appear to be heat, tension, pressure, friction, and moisture. The author illustrates their effect on the fabric by taking the calender as an example.

Other processes discussed, in which the physical properties of the fibers are utilized, are mercerization of cotton fabrics, crabbing of wool fabrics, dulling of acetate fabrics, and setting of nylon fabrics.

Chemical substances applied to fabrics in finishing may be classified as follows: (a) nonpermanent substances which are removed in laundering; these include softening and stiffening agents and compounds to produce fire and water resistance; (b) substances which are resistant to laundering; comparatively few finishes can be so classified, but an example is the application of urea-formaldehyde resin to produce permanent glaze and embossed effects; (c) substances which modify the physical and chemical properties, and which chemically combine with, or chemically alter the fiber; as examples the author points to formaldehyde treatment of viscose rayon for dimensional stability, and various devices for prevention of shrinkage of wool fabrics.

The article closes with an extensive discussion of finishing machinery.—WHC

COMING EVENTS

AMERICAN ASSOCIATION OF TEXTILE TECHNOLOGISTS

Meeting: December 5 (Builders Club, New York.)

AMERICAN SOCIETY FOR TESTING MATERIALS

Spring Meeting and Committee Week, March 3-7, 1952, Cleveland, Ohio.

Annual Meeting, June 23-27, 1952, New York, N. Y. (The biennial Apparatus and Photographic Exhibits will be held in conjunction with this meeting).

1953—Spring Meeting (Hotel Statler, Detroit, Mich.)

Annual Meeting (Chalfonte-Haddon Hall, Atlantic City, N J.)

1954—Spring Meeting (Shoreham Hotel, Washington, D C)

Annual Meeting (Sherman Hotel, Chicago, Ill.)

FIBER SOCIETY

Meeting: April 16-17, 1952 (Clemson House, Clemson, S. C.)

NATIONAL ASSOCIATION OF TEXTILE MACHINERY MANUFACTURERS

Exhibit of American Textile Machinery, April 26-May 1, 1954, Atlantic City Exhibition Hall, Atlantic City, N. J.

NEW YORK BOARD OF TRADE

26th Annual Dinner of the Drug, Chemical and Allied Trades: March 6, 1952.

26th Annual Meeting: September 21-22, Shawnee-on-Delaware, Pa.

SOCIETY OF PLASTIC ENGINEERS, INC.

January 16-18, Edgewater Beach Hotel, Chicago, Ill.

SYNTHETIC ORGANIC CHEMICAL MANUFACTURERS ASSOCIATION OF THE UNITED STATES

Luncheon Meeting — Hotel Commodore (November 14.)

Annual Meeting and Dinner—Hotel Commodore (December 11).

NEWS

• GDC Reports Marked Interest in Marhen Process*

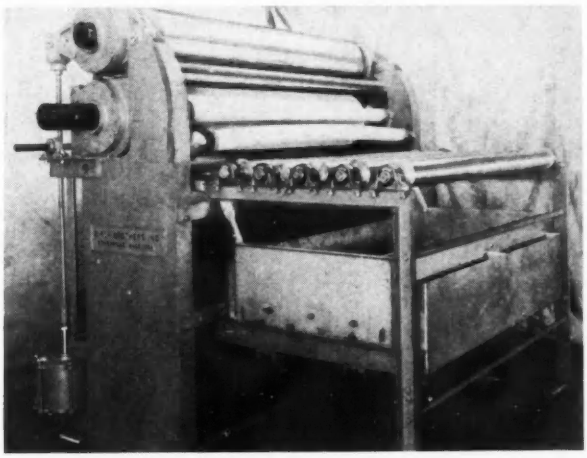
The Marhen Process, an important new method for continuous control of the application of high quality vat dyes, is creating increasing interest according to officials of the General Dyestuff Corporation. The new method, which provides an electronic control for the reduction potentials that govern the dyeing efficiency of the vat dyebath, is named after its inventors, D E Marnon and J H Hennessey of the GDC research staff.

J Robert Bonnar, GDC technical director, points out that the dyer can now readily measure and control the ability of a particular bath to do a specific job, avoiding the use of excessive amounts of caustic soda or sodium hydrosulfite. It is reported that a considerable yardage has been dyed successfully under the new method in some of the nation's leading mills.

Reducing power in terms of electrons is reportedly measured by the Marhen Process through the use of suitable electrodes and measuring equipment. (The equipment used in the research that led to the new process' development was a Brown Recording Potentiometer manufactured by Minneapolis-Honeywell Corporation. It was modified for the purpose by electronic engineers at the General Aniline & Film Corporation's Central Research Laboratory at Easton, Pa).

Benefits of the new method, as cited by the General Dyestuff Corporation, include: uniformity and constant shade in high quality dyeing, elimination of doubts as to end result, savings in chemicals (particularly sodium hydrosulfite and caustic), time saving, possibilities in dyeings of difficult construction, and enhancing of the Vat dyes' reputation.

* The Marhen Process will serve as the subject of a paper to be presented before the New York Section, AATCC, on November 30th at Kohler's Swiss Chalet, Rochelle Park, N J.



2-Roll, 72" Birch Brothers Padder or Quetsch for Use in Applying Resin Treatment or Other Compounds to Fabrics.

• 15-Ton Pressure Padder

Birch Brothers, Inc, Somerville, Mass have developed their 1951 Quetsch (or Padder) to a capacity of 15 tons pressure, which is applied through air cylinders that exert force on the top roll by means of levers. In this machine, the bottom (or driven) roll is rubber covered and the top roll is of stainless steel in order to avoid the marking off of the face of printed goods onto the top roll. The machine is made for ordinary applications with the bottom roll of stainless steel and the top roll rubber covered.

The rolls are said to be of exceptionally rugged construction (which is borne out by the crowning of the rubber roll), with an extra heavy shaft running completely through them. Mountings are on self-aligning roller bearings.

The levers in which the top roll is mounted are reported to be semi-steel castings. Preceding the squeeze rolls is a pair of Birch Brothers rubber expanders and, on the entering end, a stainless steel tank fitted with an apron is designed to catch the liquor from the squeeze rolls. This tank has a partial steam jacket designed to keep the liquor at the desired temperature.

The top immersion rolls run in ball bearings and the bottom ones in special fiber bearings. Both are of stainless steel.

A built-in compensator is fitted at the delivery end of the machine to regulate its speed when it is set in a range with other equipment.

• Instron Adds Tensile Tester Accessories

Instron Engineering Corporation, 2 Hancock St, Quincy 71, Mass, has added several accessories to their already well-established Tensile Tester in an effort to extend its versatility. An auxiliary removable cross head (see photo on following page) is now attached to the frame below the moving crosshead. Compression type load cells have a rigidly attached load sensitive table, and the sample is compressed between this table and the moving crosshead.

The same flexibility of control for operating the motion of the crosshead in tensile measurements is now reported possible for compression testing. Load deformation, cyclic, and relaxation data can

THE ANNUAL PROCESSING REVIEW NUMBER WILL APPEAR ON DECEMBER 10TH

Instron Tensile Tester With New Compression Accessory

be obtained, and, by the use of simple jigs and fixtures, torsion and flexural measurements may be carried out to evaluate more completely the mechanical properties of the test specimen.

The full scale range of compression tests available with three interchangeable load cells is said to extend from 20 grams to 5000 pounds.

An integrator has been developed which, when applied to the Instron Tensile Tester, gives a reading of the area under the load deformation curve equivalent to the energy either absorbed or returned by the test sample.

• "Sobertabs"

As a blessing to all factory and office employers and to wives responsible for seeing that their man gets to work on time, regardless of alcoholic imbibing the night before, a new compounded formula in tablet form has been developed by the Amlo Company, 64 W Randolph Street, Chicago 1, Illinois, which, when taken internally, is said to relieve the effects of overindulgence, clear the head quickly and restore mental and physical alertness.

Called "Sobertabs", these tablets are ½" in diameter and are marketed in a nonshatterable 2" plastic vial with air tight cap, containing 12 tablets.

The average treatment is reported as two tablets with relief experienced in 20 to 25 minutes.

In addition to providing much needed vitamins, Sobertabs are said to set up a unique sobriety-inducing action.

• Kreelon CD Available in Commercial Quantities

Walter L Rippeteau, manager of organic chemicals sales, Wyandotte Chemicals Corporation, Wyandotte, Mich, recently announced the development of the first promoted industrial detergent to be commercially produced—Kreelon CD. In properly compounded cleaners, it is claimed, this product can be substituted for any other alkylarylsulfonate detergent "with a 20-70% improvement of soil removal and whiteness retention properties in the cleaning and processing of cottons".

Kreelon CD is an integral mixture of Wyandotte's Kreelon, an alkylarylsulfonate type detergent, and Carbose, sodium carboxymethylcellulose. The manufacturer anticipates its application in the textile field for such operations as scouring, kier boiling, after-soaping, etc. It reportedly imparts superior soil removal properties, provides greater prevention of soil redisposition, offers brighter color, and reduces skin irritation. All in all, the advantages of a good detergent and a detergent promoter are offered in this fast-dissolving, dustless product, according to reports.

• Monsanto Introduces New Sulfone

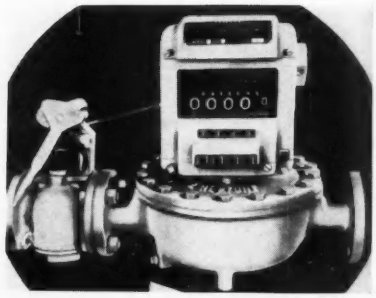
A new sulfone, diamino diphenyl sulfone, is now in production at Monsanto Chemical Company's Merrimac Division. L F Loutrel, Jr, Merrimac development director, has disclosed that the new product, a free-flowing light brown powder, is available in research quantities. Its chief promise appears to be in the synthesis of azo dyes, though it is expected to have important applications as an intermediate for organic synthesis and as a basis for ion-exchange resins.

Monsanto has also announced a "substantial" increase in the production of Stymer, a synthetic resin used extensively as a sizing agent.

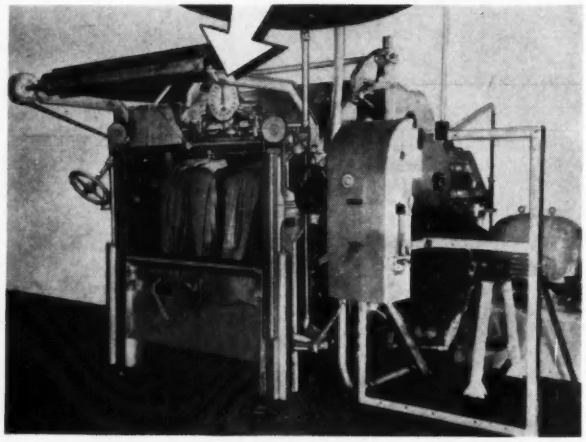
• Optional Stopper for R & L Soapers

The Neptune "Auto-Stop" Meter, which reportedly can be set for a given number of gallons and then will automatically shut off, is the latest of new optional equipment for Riggs & Lombard soap distributing systems. It is said to save ingredients, control formulas accurately, improve housekeeping, and provide accurate cost accounting figures.

To operate, the tripping mechanism on the register is first set by pushing the buttons on the register until the number of gallons desired shows up on the setting wheels just above the buttons. The register is then cleared back to zero, the valve is opened, and the operator is free to devote his attention to other jobs. The tripping device is said to automatically cut off the flow when the exact quantity is delivered. The large numerals on the face of the meter keep pace with the flow. The small shuttered totalizer keeps cumulative totals. Details are available from Riggs & Lombard, foot of Suffolk Street, Lowell, Mass.



Auto-Stop Meter (right) proposed to replace standard meter, shown (below) together with valves and piping as set up on Riggs & Lombard fulling mills for standard soap system.



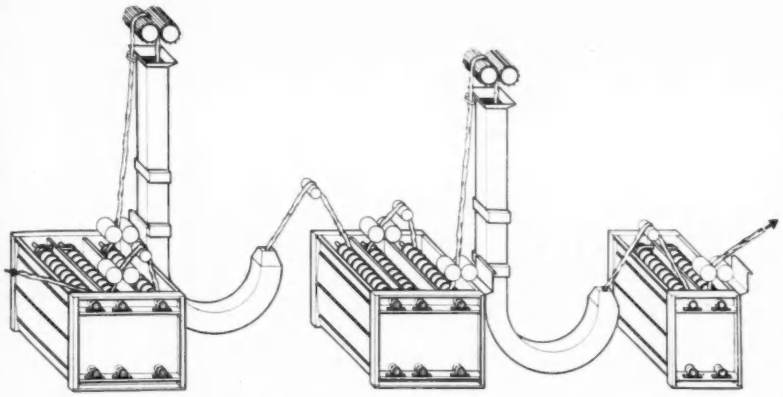


Diagram of Rodney Hunt Bleaching Rangette

• Rodney Hunt Bleaching Rangette

Rodney Hunt Machine Co, Orange, Mass, is manufacturing a new modified bleaching range incorporating a combination Tensitrol Rope Washer-Saturator to run at speeds of from 50 to 100 yards per minute. Full benefits of tensionless handling and thorough saturation are said to be obtained with the overdrive principle of Tensitrol Washing. The Range is geared to a simplified drive arrangement, which does much to reduce both initial and operating costs, it is reported. Company officials have stated that components can be set up in a variety of different groupings to fit customer requirements. Rodney Hunt offers a choice of Becco or du Pont type J-Boxes.

• Three Primary Aliphatic Amines Announced

Three new high molecular weight aliphatic amines, and a new amine acetate, have been announced by Rohm & Haas Company, Philadelphia, while prices of the previously announced members of the series have been reduced by 10 to 15 cents per pound.

The new amines are designated Alkylamine JM-R, Alkylamine JM-T and Alkylamine 81-T. Alkylamines JM-R and JM-T are refined and technical grades of a tertiary alkylamine averaging 18 carbon atoms in length. The new amine acetate is the derivative of Alkylamine JM-T. Alkylamine 81-T is a technical grade of the previously announced Alkylamine 81-R, a refined tertiary alkylamine containing 12 to 15 carbons. Also available in the series is tertiary octylamine, an eight carbon, refined grade. All members of the amine series have now graduated from the pilot-plant stage, and are available in truck-load quantities at the new, reduced prices, according to C E Denoon, Jr, manager of Rohm & Haas's Special Products Department.

Samples and technical literature describing physical properties and experimental directions for the reactions of these amines are available from Department SP, Rohm & Haas Company, Washington Square, Philadelphia 5, Pa.

• Sewability Finish Available

Warcolene D, a sewability finish that is designed to improve seam efficiency and prevent scorching, is currently being produced and made available by the Warwick Chemical Company, Division of Sun Chemical Corporation, 10-10 44th Ave, Long Island City, N Y.

The product is a nonionic emulsion of compounded lubricant and is in the form of a white, creamy emulsion that is said to be compatible with most other finishing agents. It forms a stable milky emulsion when diluted with warm water.

According to Warwick, it is gaining wide acceptance as a sewability finish for the treatment of government fabrics, such as herringbone twills, covered by specification MIL 154A.

• Emery Industries Increases Plasticizer Production

Emery Industries, Inc, Dept 5, Carew Tower, Cincinnati 2, Ohio has increased production of Plastolein 9250 (Tetrahydrofurfuryl Oleate), which is primarily used as a secondary plasticizer for vinyl compounding. Plastolein 9250 is said to impart low-temperature flexibility characteristics and excellent drape to vinyl film and sheeting. It is characterized by good oxidation stability, light color, and good heat and light stability.

Samples of Plastolein 9250 and a specification pamphlet covering all of the Plastolein Plasticizers are available on request from Emery Industries.

• New Interchem Yellow

Interchemical Corporation, Textile Colors Division, Hawthorne, N J, has introduced a new bright reddish yellow for dyeing and printing of acetate and nylon. The new product, Interchem ® Acetate Yellow RLF-40 is said to possess exceptional fastness to light and reportedly may be employed as a self shade or in combination. It is recommended by the manufacturer for application to suitings, dress goods, slacks, draperies, and other fabrics that are required with a high degree of fastness, particularly to light, gas, washing, and dry cleaning.

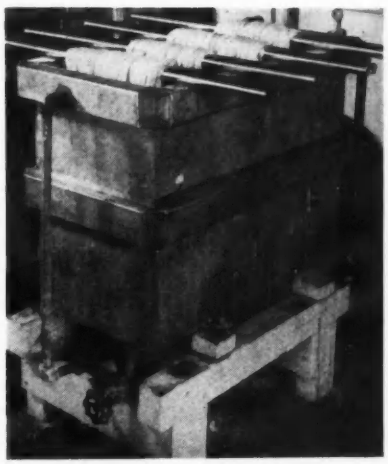
Interchem ® Acetate RLF-40 reportedly has no affinity for either cotton or viscose rayon, thereby making it suitable for cross-dyeing. It may be applied either on jigs or boxes, and is suitable for application printing in all depths of shade, it is stated.

• PTI Using Carpenter Steel Dye Sticks

With many types of dyestuffs being used in experimental work on delicate fibers, the Philadelphia Textile Institute is currently using stainless steel tubing for dye sticks to resist corrosive effects. An Institute spokesman has stated that the tubes as produced by Carpenter Steel Company, Union, N J, are "completely resistant to the corrosive effects of acid, chrome, vat, direct and acetate dyestuffs".

The strength of the stainless steel is said to be adequate when skeins are thoroughly soaked and the smooth, polished surfaces of the tubes are hard enough to resist scuffing or scratching.

In addition to using stainless steel tubes as dye sticks, PTI has equipped dryers with racks of the same material.



An installation at the Philadelphia Textile Institute showing an application of stainless steel dye sticks.

NAMES IN THE NEWS

Laurence E Rossiter

• Rossiter Takes New Nopco Post

LAURENCE E ROSSITER replaced HAROLD J WALDRON, retiring New England District sales manager for the Nopco Chemical Company last month. Mr Rossiter, a member of the Rhode Island Section, AATCC, has been with Nopco for over 10 years, having joined the company in 1940 as a member of the Products Control Laboratory staff.

As district sales manager, he will be in charge of the New England sales force and will operate from the company's offices at 10 High Street, Boston. In addition to responsibility for sales of the broad line of processing specialties manufactured by the Industrial Division of Nopco, Mr Rossiter and his staff will handle sales of the metallic soap products of the Metasap Chemical Company, a wholly owned Nopco subsidiary.

• New GAF Product Engineers

GEORGE M GANTZ and JOHN A YEAGER have joined the Product Development Department of the General Aniline & Film Corporation as product engineers. Dr Gantz was formerly director of research for the Lonsdale Company, Lonsdale, R I. For the past eight years, Mr Yeager has been an applications chemist at GAF's Central Research Laboratory.

G M Gantz

• Rosenthal Serves With U S Delegation

MORRIS S ROSENTHAL, President of Stein, Hall & Co, Inc, served as a member of the United States delegation to the U N Economic Commission for Asia and Far East Regional Conference on Trade Promotion that was held at Singapore, October 9-18, for the purpose of discussing international trade and world economic conditions.

• Alkus Recovering Following Hospital Siege

WILLIAM ALKUS, vice president of the Richmond Oil, Soap & Chemical Co, Philadelphia, is recovering after a period of time in the hospital.

• Adair Joins Warwick in S C

Warwick Chemical Company, Division of Sun Chemical Corporation, has announced that E R ADAIR has joined HENRY PAPINI in representing Warwick in South Carolina. Mr Adair will concentrate on technical service of the Suntone pigment colors.

Mr Adair was employed by Southern Bleachery and Print Works, Taylors, S C, in various capacities for ten years.

• New PTI Faculty Members

New additions to the Philadelphia Textile Institute Faculty for this, the third year at the new Germantown campus, are as follows:

ELIZABETH RAMSAY—assistant professor, testing and microscopy

WILLIAM J WOLFGANG—instructor in mathematics and mechanics

ROBERT KENYON—Department of Chemistry and Dyeing

DAVID HERMAN—assistant instructor, weave formation and fiber analysis

DAVID GIESE — Weave Formation — Fabric Analysis Department

BERT AMADOR — special assistant, Weave Formation-Fabric Analysis

• Artim New Dad

EDWARD ARTIM, director, Research and Testing Lab, S Augstein & Co, Inc, is a new father. His wife presented him with a son, Craig, almost immediately upon his return from the AATCC Convention. The youngster checked in at 6 lbs 9 ozs.

• Noted Italian Executives to Visit U S

FRANCO MARINOTTI, president and director general of Snia Viscosa, s a, Milan, Italy, is coming to the United States as a member of the Italian delegation that will attend a management conference being held under the auspices of the National Association of Manufacturers and the American Management Association, from November 19-December 8. He will be accompanied by the commercial director general of the Snia Viscosa Group, DR G LAZZERI.

OBITUARY

Albert Leitstein

ALBERT LEITSTEIN, general manager of the Featured Fabric Finishes Department of Warwick Chemical Company, division of Sun Chemical Corporation, died of a heart attack on September 28th. He was 45.

Prior to joining Warwick, Mr Leitstein was associated with L Sonneborn Sons, Inc and Chopak Textile Corporation.

Burial was at Mt Ararat Cemetery, Pine Lawn, L I.

Mr Leitstein is survived by his widow and two daughters.

Joseph Wrench

JOSEPH WRENCH, 74, died on Saturday, September 15th, at Roslyn, L I, five years after his retirement from the Chemical Division of the West Virginia Pulp and Paper Company, with whom he was employed for 34 years. Burial was at the Amityville Cemetery.

Born in England in 1877, Mr Wrench was associated with the Electrolytic Alkali Company, Middlewich, England, from 1902 until 1912. He came to the United States in 1912 to join the Chemical Division of the paper company, which at that time operated under the name of Industrial Chemical Company. He continued with the company until his retirement in 1946, serving many years as sales manager and treasurer.

He is survived by a son and daughter.

For Spring...

SANDOZ FORECASTS

Benedictine

a luscious golden spice

Spirited liqueur shades—yards and yards of skirts and stoles—make fashion news for spring. Particularly delightful is *Benedictine*, a rich, golden spicy shade named after the famous 16th Century French liqueur. To produce *Benedictine* in wool fabrics Sandoz recommends Alizarine Light Brown BL which is practically identical in its self shade. It possesses exceptional fastness to light along with good fastness to fulling and carbonizing. It may be dyed with or without chrome with equally good results, and has excellent level dyeing properties from a neutral bath. Alizarine Light Brown BL is also recommended for dyeing tans, taupes and camel shades where top light fastness is required such as other interesting liqueur tones which blend so perfectly with *Benedictine*—fashion selections for spring of The Textile Color Card Association. For forecast colors as well as perennial favorites... both natural and synthetic fibres...select from the Sandoz line of chrome, acid, direct dyes and auxiliary chemicals.

For light fastness in rayons and cottons, too

SANDOZ CHEMICAL WORKS, INC.,
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Application laboratories and stocks at
Boston, Philadelphia, Charlotte, Chicago,
Los Angeles, Toronto. Other branches at
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SANDOZ *Thinks ahead with textiles*

SANDOZ

For extreme light fastness for greys, sands, taupes

PYRAZOL Fast Rubine BLN

Pyrazol Fast Rubine BLN is an excellent red element for greys, sands, and taupes due to its extreme light fastness with or without urea formaldehyde resin. Combined with Pyrazol Fast Blue RUL or FGL and Pyrazol Fast Orange 4G it gives exceedingly good light fastness at moderate costs. Pyrazol Fast Rubine BLN is ideal for rayons and cottons for both men's and women's suitings, sport shirts, slacks.

It is a good leveling color, suitable for jig work, draws well and shows good exhaustion.

Excellent fastness to perspiration.

SANDOZ CHEMICAL WORKS, INC. *61 Van Dam Street, New York 13, N. Y.*
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SANDOZ *thinks ahead with textiles*

"light soaping is enough!"

—TO RINSE PRINTING THICKENER OUT COMPLETELY

AMBERFLO, a highly soluble printing thickener, deposits a soft print. Light washing rinses it out quickly. Easily. Completely. Using tap water. Result? Happier production men. And fabrics that warm a fashion designer's heart with their softness . . . sparkling color . . . finer hand and body.

AMBERFLO eliminates cooking, cooling and expensive mixing equipment. Simply blend it with chemicals and water. In a few minutes, the "color" is ready. Splitting is minimized on "Sheers" and other fragile fabrics, because it deposits a smooth, pliable film. Color yield is higher. Penetration and detail are excellent.

AMBERFLO is recommended for vat, rapidogen, direct, acid and acetate colors. Also white discharge.
National Starch Products,
270 Madison Avenue, New York 16, N. Y.

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We want to know more!

We're interested in AMBERFLO—National's easy-rinsing, ready-for-use printing thickener.

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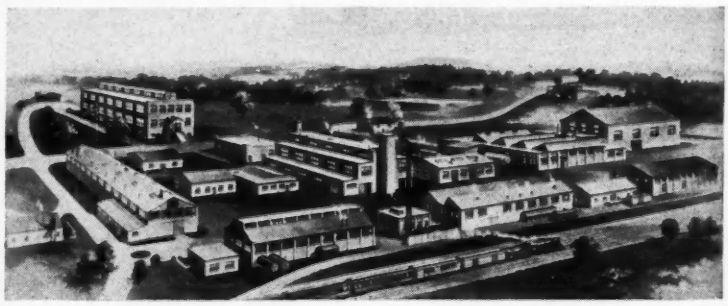

NYANZA COLOR & CHEMICAL COMPANY, Inc.

109 WORTH STREET • NEW YORK 13, N. Y.

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CAUSTIC POTASH

Liquid 45%, Flake and Solid*

NATURAL SODA ASH

Light and Dense

We are proud of the all-time alkali production records made by Westvaco plants in this year of unprecedented difficulties. We believe they will continue to make delivery as promised — both as to quality and quantity.

A continuing program of additions and improvements will provide additional Westvaco alkali tonnage into 1952. We seek new customers whom we can serve efficiently and economically by virtue of our barge, rail and tank-truck service from various Westvaco plants.

We will welcome the opportunity to discuss your alkali needs and our ability to serve them.

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fmc

*Liquid 50% also available, shipped in tank cars only.

SHIPMENT SAMPLE

You can be sure of uniform shipments of W. C. Hardesty Co., Inc. Fatty Acids because . . . Hardesty's production in its own modern plants is "Standardized" to deliver every shipment exactly . . . as per sample.

RED OIL • WHITE OLEINE • STEARIC ACID
HYDROGENATED FATTY ACIDS • ANIMAL & VEGETABLE FATTY ACIDS
GLYCERINE • STEARINE PITCH

W. C. HARDESTY CO., INC.
41 EAST 42nd STREET, NEW YORK 17, N. Y.

PLANT: DOVER, OHIO • IN CANADA: W. C. Hardesty Co. of Canada, Ltd., Toronto

better hand...quicker sale

Mrs. America may not know what you mean by "a better hand," but she seldom buys a piece of yard goods without first making sure that it "feels right."

Santomerse No. 1, employed as your detergent in scouring after dyeing, helps you produce textiles that feel *right* and sell *quickly*. It helps you get a "better hand" because it prevents the formation of lime soaps that cause harshness.

"A better hand" is only one of the advantages of using Santomerse No. 1 in scouring after dyeing. After vat dyeing in continuous units, for example, acid-resistant Santomerse No. 1 makes less alkali necessary to neutralize the acid carry-over. It reduces crocking because it washes away all unattached dye pigment. It aids in level dyeing and leaves colors free of film and *bright*.

Santomerse No. 1 is an alkyl aryl sulfonate, with a minimum of 40% active ingredient. It is a rapid wetter and penetrant and a highly efficient detergent. Santomerse No. 1 rinses out quickly and thoroughly. It is efficient in hard or soft water, in hot or cold solutions, in acid or alkaline baths.

For information on the use of Santomerse No. 1 in any textile operation requiring a penetrant or detergent, contact the nearest Monsanto Sales Office or write MONSANTO CHEMICAL COMPANY, Phosphate Division, 1700 S. Second Street, St. Louis 4, Missouri.

Santomerse: Reg. U. S. Pat. Off.

DISTRICT SALES OFFICES: Birmingham, Boston, Charlotte, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, New York, Philadelphia, Portland, Ore., San Francisco, Seattle. In Canada, Monsanto (Canada) Ltd., Montreal.

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CHEMICALS AND PLASTICS

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To Manufacturers of
Dyestuffs • Textile Chemicals • Wet Processing
Machinery • Laboratory Equipment • Incidentals

THE SIXTEENTH ANNUAL PROCESSING REVIEW NUMBER will appear on DECEMBER 10th, 1951

One of the special features of past issues, which will be continued this year, is a listing of new products for the textile wet processing field.

You are invited to submit information concerning such products which you have brought out since November, 1950.

This information should include: the trade name of the product and a BRIEF summary of its uses. Please list each product on a separate sheet of paper. If illustrations are necessary, glossy photographs or black ink drawings should be furnished. If the trade name is registered or the product is patented and you wish this indicated, please so note.

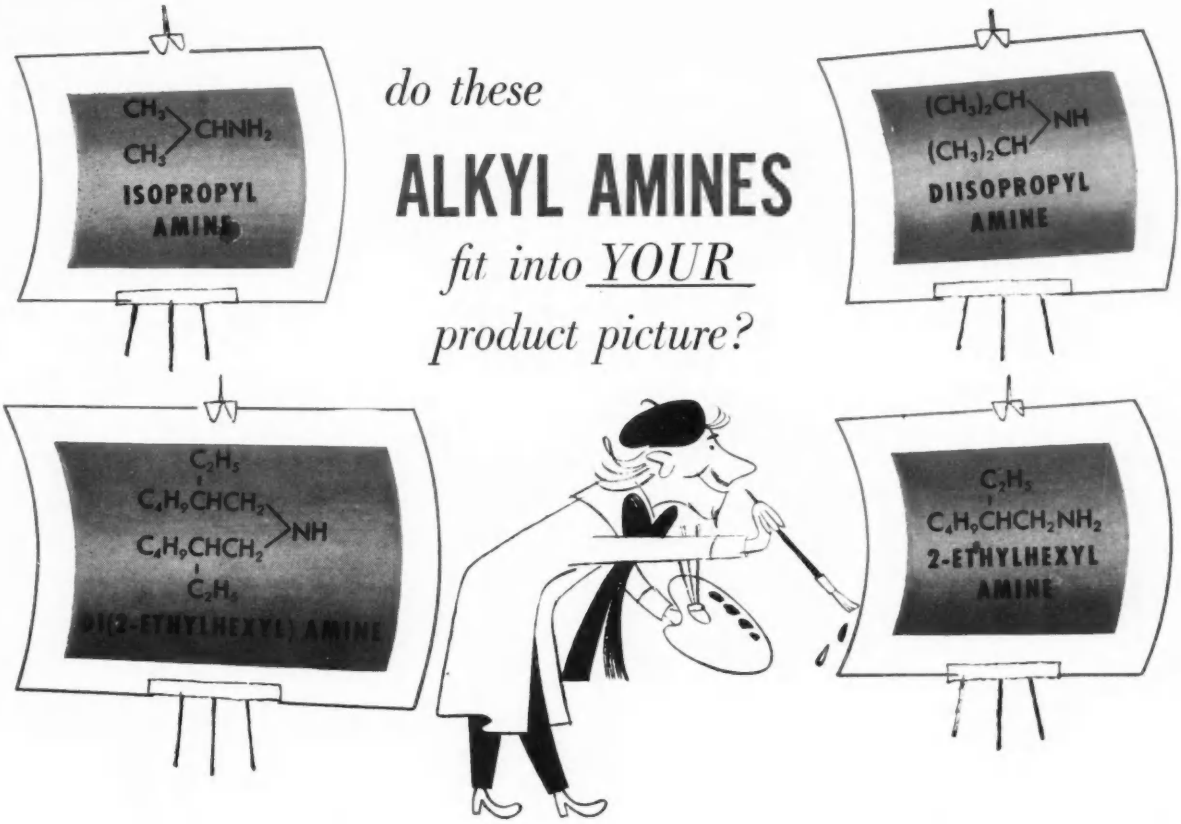
In order to insure your products being listed in our issue of December 10th, information concerning them should be in our hands immediately.

It is important that you list ONLY those products which have been brought out since November, 1950.

The response from manufacturers in the past fifteen years has provided the basis for a most valuable and useful listing and we trust that you will again cooperate to the fullest extent.

AMERICAN DYESTUFF REPORTER

44 East 23rd Street • New York 10, N. Y.



do these

ALKYL AMINES

fit into YOUR product picture?

HOW YOU CAN USE THEM . . .

ISOPROPYL AMINE
solubilizer for the selective herbicide, 2,4-D. It is shipped in anhydrous form, enabling you to make either *dry* salt or aqueous formulations. Low cost and low equivalent weight make it economical to use.

DIISOPROPYL AMINE
used to make diisopropyl ammonium nitrite, an established vapor phase inhibitor against corrosion of iron and steel.

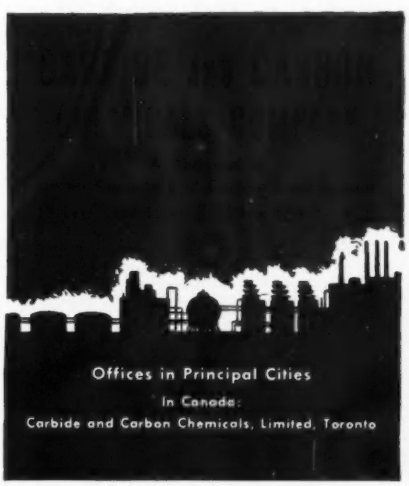
2-ETHYLHEXYL and DI(2-ETHYLHEXYL) AMINES
useful in the syntheses of dyestuffs, insecticides, and emulsifying agents. Since their octylamino groups contribute hydrocarbon solubility to many compounds, these amines should be considered when this property is desired.

Di(2-Ethylhexyl) Amine also shows promise as a cationic-type flotation agent.

These four amines are available in commercial quantities. One of them may be just the answer to your product or process problem. Investigate them now by asking for samples and information on your company letterhead. Be sure to ask for technical bulletins F-7408A, "Alkyl Amines," and F-6473, "Ethylhexyl Amines."

Physical Properties

	Isopropyl Amine	Diisopropyl Amine	2-Ethylhexyl Amine	Di(2-Ethylhexyl) Amine
Specific Gravity at 20/20°C.	0.6881	0.7178	0.7894	0.8062
Boiling Point at 760 mm., °C.	32.4	84.0	169.2	281.1
Vapor Pressure at 20°C., mm. Hg	460	70	1.2	0.01
Solubility in Water at 20°C., % by Wt.	Complete	Complete	0.25	<0.02



A Bedtime Story for Very Junior Chemists

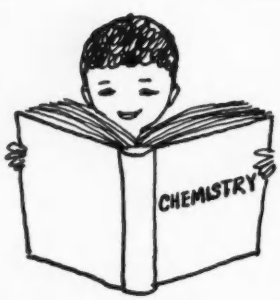
Once upon a time, there lived a sad little Sodium CarboxyMethylCellulose. He worked very hard extending Soaps and improving Synthetics. But all the Soaps called him a "war baby." And he wasn't allowed to associate with any but Low Grade Synthetic Detergents.

So he ran away. And arrived one day on the Doorstep of a Corporation in Wyandotte, Michigan. The Corporation picked him up and handed him over to the Research and Development Division. Well, you should see what they did for this little "war baby"!

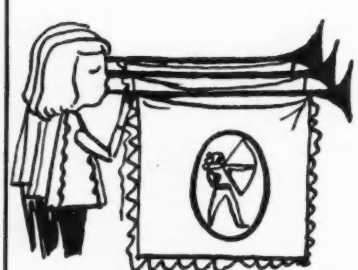
They changed his length and Molecular Structure. They Manufactured him by a brand new Process. They let him associate with High Grade Synthetic Detergents. And then they gave him a name . . . "Carbose*."

*Reg. U. S. Pat. Off.

Carbose might have been very happy—but the Soaps still put on airs. "No matter how hard you and those Synthetics try," the Soaps told him, "nothing cleans as well as Soap."



But he worked hard just the same. He practiced Soil Removing and Whiteness Retaining and all the other things a detergency promoter should. And one great day, the Research and Development Division called the Soaps and Synthetics together and read a Proclamation:



"Synthetic Detergent products can be formulated with Carbose which will yield detergency equal to that of High Grade Soaps under conditions favorable to Soap, and far superior to High Grade Soaps under conditions unfavorable to Soap."

"Carbose!" Why, they were talking about him! Carbose was a hero! Yes, it was a great triumph for him . . . but Carbose went on . . . had a large family and did many more things . . . in textiles, paper, paints, ceramics, petroleum . . . and even in soap!

Soda Ash • Caustic Soda • Bicarbonate of Soda • Calcium Carbonate • Calcium Chloride • Chlorine • Hydrogen • Dry Ice Synthetic Detergents • Glycols • Carbose (Sodium CMC) • Ethylene Dichloride Propylene Dichloride • Aromatic Sulfonic Acid Derivatives • Other Organic and Inorganic Chemicals

WYANDOTTE CHEMICALS CORPORATION
Wyandotte, Michigan — Offices in Principal Cities

Wyandotte
REG. U. S. PAT. OFF.

So if you are looking for a chemical with applications involving viscosity regulation, colloid stabilization, surface finishing, or detergency, why not write to us about Carbose?

it's WISE to insist on DUROFAST

If you give a "hoot" about the reputation that your fabrics earn after they leave your hands . . . then insist on the finest, longest lasting colors for every yard of fabric you process. Insist on DUROFAST colors. For DUROFAST offers a complete range of direct colors, extremely fast to light and washing — with or without after-treatments. Don't be satisfied with anything less. Be sure to specify DUROFAST colors.

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A direct cotton and rayon dye
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- Acetate effects remain white
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SOLVAY SALES DIVISION
Allied Chemical & Dye Corporation
40 Rector Street, New York 6, N. Y.

how to arrest GAS FADING without sacrificing light fastness

Because Warco* GFI combines superior protection against gas fading without affecting light fastness, leading finishers are switching today to this unexcelled gas fading inhibitor for acetate fabrics and blends containing acetate.

In addition to these long sought twin features, Warco* GFI offers these advantages:

1. **Gas fading feature, protects through 3 to 5 cycles of gas and is durable to both washing and dry cleaning.**
2. **Has no effect on shade of dyestuffs under normal conditions . . . helps to produce truer shades.**
3. **Is self contained and self emulsifying. The emulsion is stable at any temperature after proper initial mixing.**
4. **Exhausts rapidly and uniformly during the dyeing.**
5. **May be applied in any of the conventional dyeing equipment currently used in dyeing fabrics and yarns.**

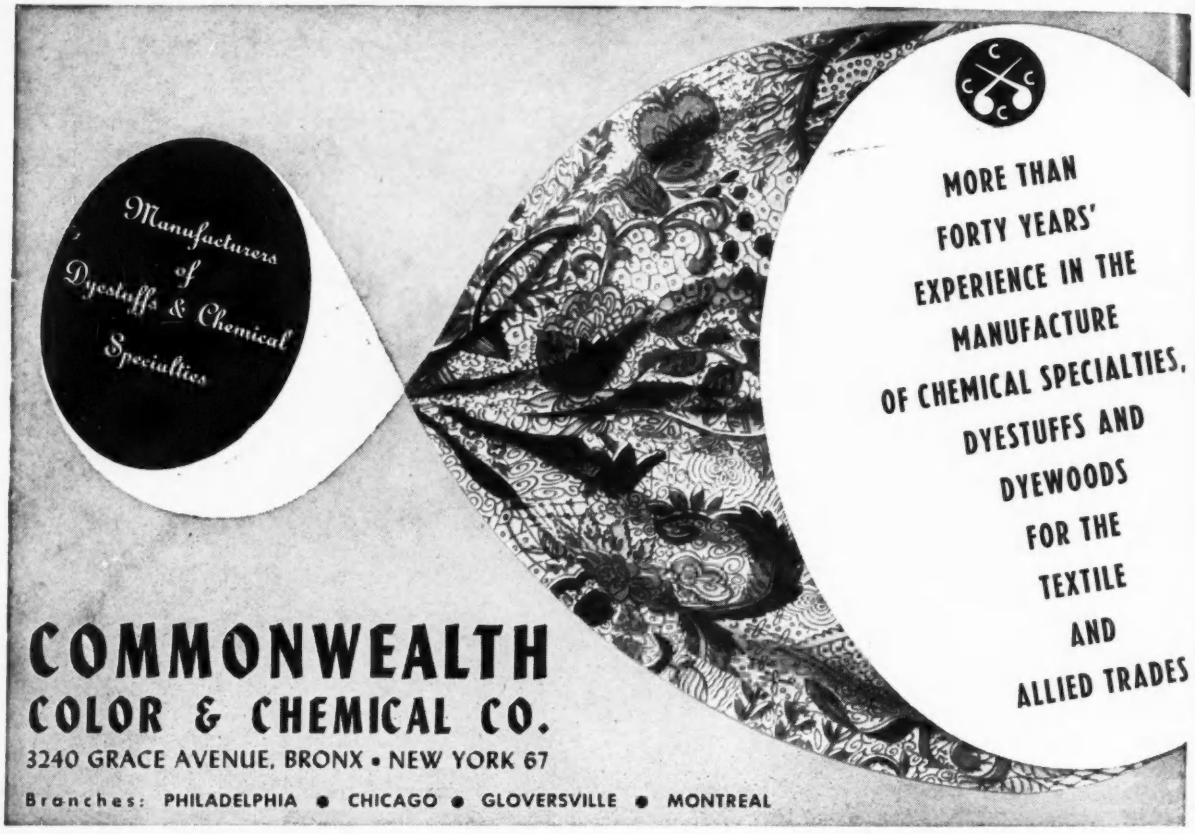
WARCO* GFI

Ask your Warwick representative to show you comparison tests of Warco GFI on acetate fabrics. Or send for sample to make your own tests. For any information on Warco GFI . . . or other textile chemicals, write, wire or phone.

WARWICK CHEMICAL COMPANY, DIVISION — CHEMICAL CORPORATION

10th STREET and 44th AVENUE, LONG ISLAND CITY, NEW YORK

CHEMICALS FOR THE TEXTILE INDUSTRY—Antilustrole* dullers • Appramine* cationic softeners • Appretole* anionic softeners • Eumercin* mercerizing assistants Formaset* textile resins • Lanole* tar and grease removers • Organosol coatings for textiles and paper • Plastisol for coating and molding • Setole* textile resins Sulfanole* synthetic detergents • Suntone* pigment printing colors for textiles and plastics • Warcofix* color fixatives • Warco* GFI gas fading inhibitor Warcolene* finishing oils • Warconyl* fire retardants • Warcosan* wetting and rewetting agents • Warcosol* penetrants • Weave-Lok* non-slip finish. •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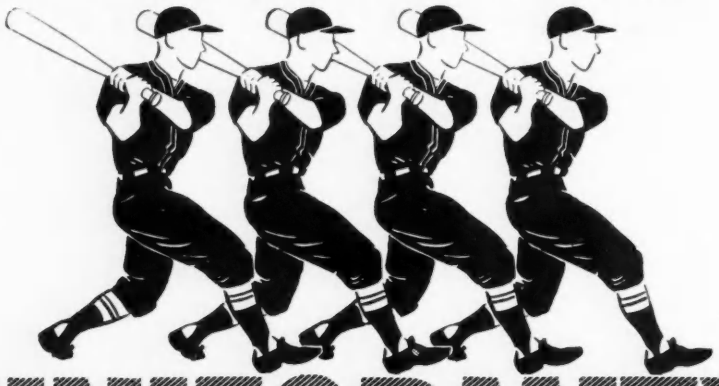

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Consult your local dyestuff distributors for information and samples. Shipments can be made from their convenient stocks or from our Baltimore and Paterson warehouses.

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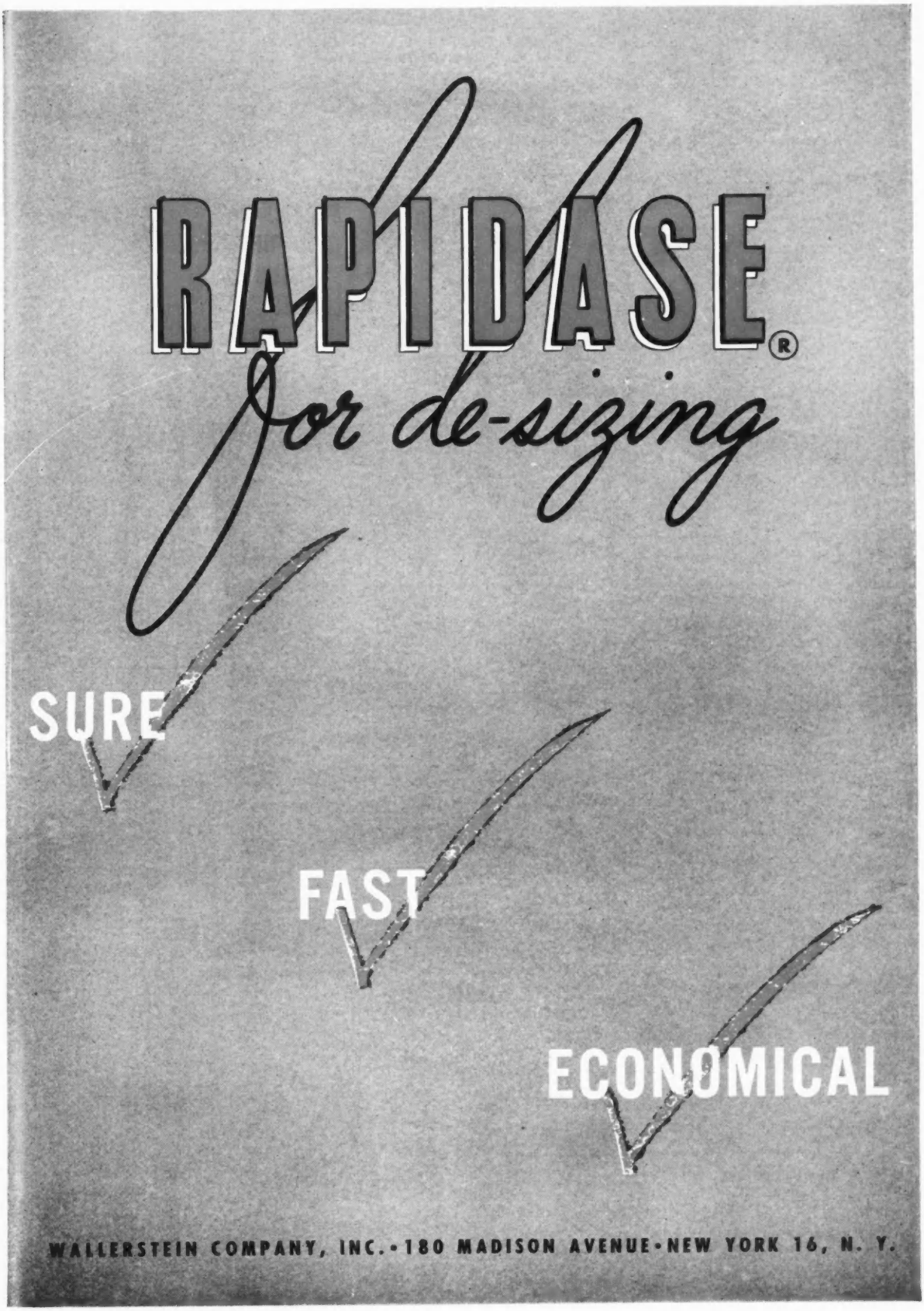
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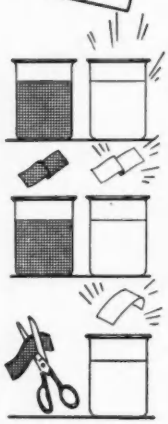
HOW TO PREVENT IRON STAINS . . .

Try this experiment!

Versene T*
BEAKER #1
(one liter) 500 cc of 5% caustic soda solution plus 5 cc of 0.1 Molar Ferric Chloride (27 gms. $FeCl_3 \cdot 6H_2O$ per 1000 cc water).
BEAKER #2
(one liter) Same contents as Beaker #1 but with 5 cc of Versene T added.

PROCEDURE BY STEPS

First, add the caustic to each beaker. Then, to Beaker #2, add 5cc of Versene T. Heat both beakers to boiling point and add the 5cc of the Ferric Chloride to each beaker. Note the difference between the solutions. Beaker #1 (containing no Versene T) is muddy with rust. Beaker #2 is water-white. Next, put a small strip of clean white cotton cloth in each beaker and boil a few minutes. Remove strips and rinse with water. Note the difference. Versene T has kept its strip white in spite of the iron that was added.



Last, take the other rust-stained strip, cut in half and place one-half in Beaker #2 containing the clear solution with the Versene T in it. Boil for a few minutes. Remove, rinse and compare. The Versene T has now restored the rust-stained cloth to its original whiteness.

VERSENE T — FOR ANY CAUSTIC SOLUTION. Test Versene T now. Then try it in your own caustic solutions. It does on a commercial scale exactly what it will do in the laboratory. Write Dept. D. Send for Technical Bulletin #2. Ask for samples.

(See us at Booth No. 803, International Chemical Exposition)

NEW VERSENE WATER TEST KIT. Tells total hardness in two minutes. Accurate to one grain per gallon. Versenate Method. Complete Kit $5. Postpaid.

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Division of **Orange Roller Bearing Co., Inc.**
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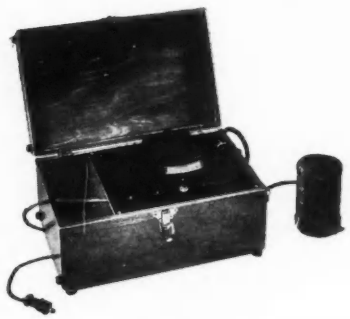
with

PHOTOVOLT Photoelectric REFLECTION METER



A truly practical precision instrument for color matching and for specifying color by tristimulus values, also for fading and detergency tests . . . for production control and laboratory work.

Portable, sturdy, simple to operate

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SCOURCLEANS

For Wool, Cotton and Rayon
Best for Oil Removal

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- HYDROXY* SIZES for Acetate, Viscose, Bemberg, Filament Yarns. Also for cut staple and mixtures.
- RAYSPINOLS for oiling cut staple stock. Cuts down waste and makes good spinning.
- HYDROXCENE for Rayon Crepe Yarns.
- WETTING and FINISHING AGENTS for Rayon, Nylon, Cotton, Silk, Cut Staples and Mercerized Cotton
- PURE SILK THROWING OILS.
- WATERSHIELD Water Repellents.

* (*Reg. U. S. Pat. Off.*)

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SODIUM SULPHIDE FLAKES

Our flakes dissolve into a PALE YELLOW - SEDIMENT FREE solution denoting a minimum of IRON or other HEAVY METALS

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RECORDING SPECTROPHOTOMETER INDISPENSABLE

for color analysis and control at Interchemical

Dan Smith, color expert at Interchemical Corporation, New York City, says "Our company finds the G-E Spectrophotometer indispensable for color work. It is the only way to insure exact color control and meeting of color standards."

With the G-E Recording Spectrophotometer:

- Control color processes
- Do rapid colorimetric analysis
- Get an automatic linear curve of reflectance
- Set up color standards scientifically

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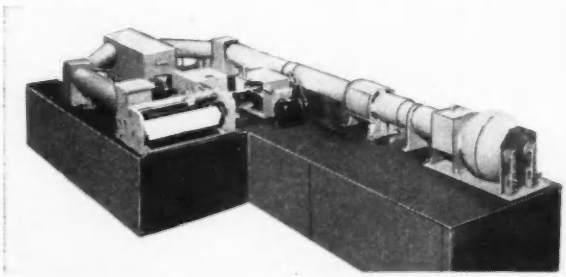
One of the first G-E recording spectrophotometers, this instrument has been in service at Interchemical for 15 years.



Latest model G-E recording spectrophotometer. Due to the excellent results obtained with the original model, Interchemical has added three of these to its facilities.

Section G, 687-59,
General Electric Co., Schenectady, N. Y.

Please send me bulletin GEC-307 on your recording spectrophotometer.

☐ Planning an immediate project ☐ For reference purposes

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DYEING-PRINTING PLANT SOUGHT—Interested in communicating with owner of small textile printing and dyeing plant who would consider selling same to European emigrant after one or two years' collaboration. Write P.O. Box 226, Church St. Station, New York 8, N. Y. Department 35G.

POSITION WANTED: Experienced package and hosiery dyer on cotton, mercerized rayon, nylon, wool with vats, naphthols, develops, acid, directs and aftertreated dyestuffs. Twenty years as foreman on dyeing, winding, etc. Handle help successfully. Production and cost-minded. High school and ICS chemistry education. Am married, now employed. Prefer southern location. Am sober. Write Box No. 215.

WANTED: Southern district salesman. Graduate of a recognized textile college preferred. Excellent opportunity for the right man. Please state age, experience, draft status, and salary expected. Write P.O. Box 208, Dublin, Georgia.

POSITION WANTED: Technical Sales. Large following, wide experience on all types dyeing equipment, backed with wet and dry finishing experience. Business training, consulting and executive background. Married. Write Box No. 186.

WANTED: Dyer - Acetate - Nylon - rayon piece goods on Jiggs or Boxes. State experience, salary desired, technical background. Third shift. Paterson, New Jersey, Post Office Box 1742.

WANTED—dyer experienced on synthetic—filament and spun—fabrics and blends. Excellent opportunity—employment in south with large, well-established company. All applications must include full details of work experience, background and salary expected. Write Box No. 212.

WANTED SUPERINTENDENT, quality jig dyehouse, metropolitan area, technical education preferred, must have exceptional background as leader of labor and high quality production record. Please describe background details and experience fully. Write Box No. 219.

POSITION WANTED: dyeing tricot fabrics. Good background of tricot dyeing, finishing and testing experience. Write Box No. 216.

POSITION WANTED: Dye and intermediate chemist, BS. Nine years organic chemistry; 10 years in dyestuff industry, research development, analytical control, and production. Locate in Metropolitan area. Write Box No. 220.

WANTED: Southern and N.E. distributor or salesmen for distribution of long established manufacturer's complete line of industrial soaps, detergents, compounds, etc. Splendid opportunity. Kindly give full particulars. Write Box No. 221.

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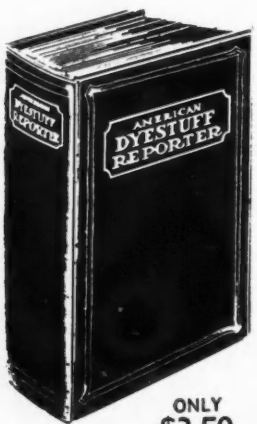

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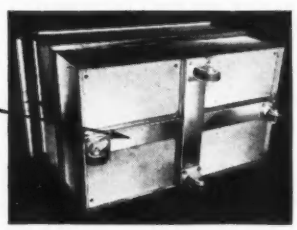

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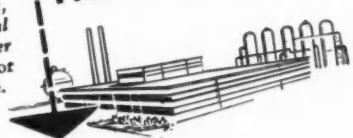

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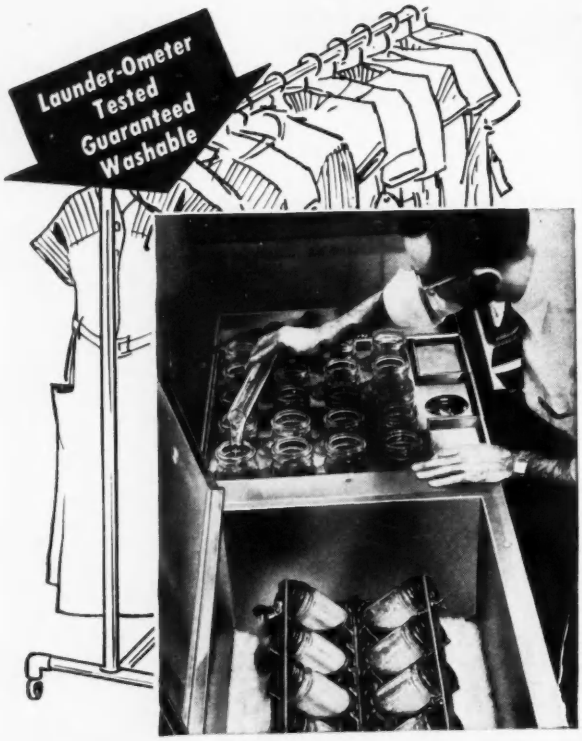

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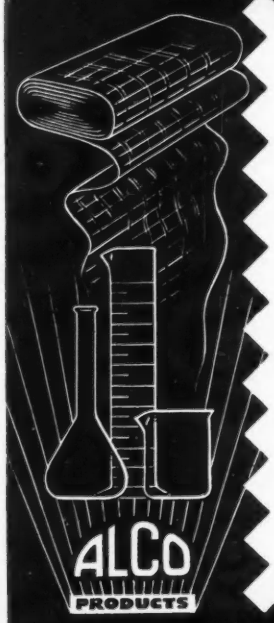

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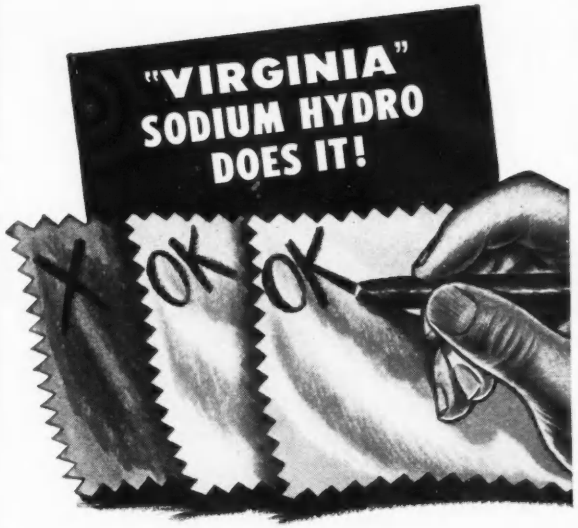

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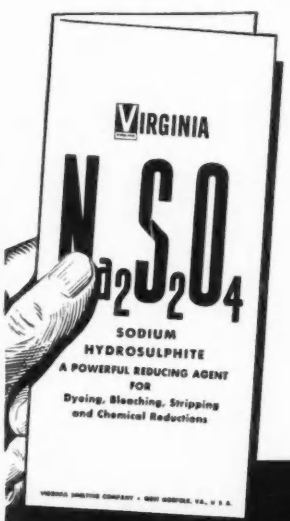

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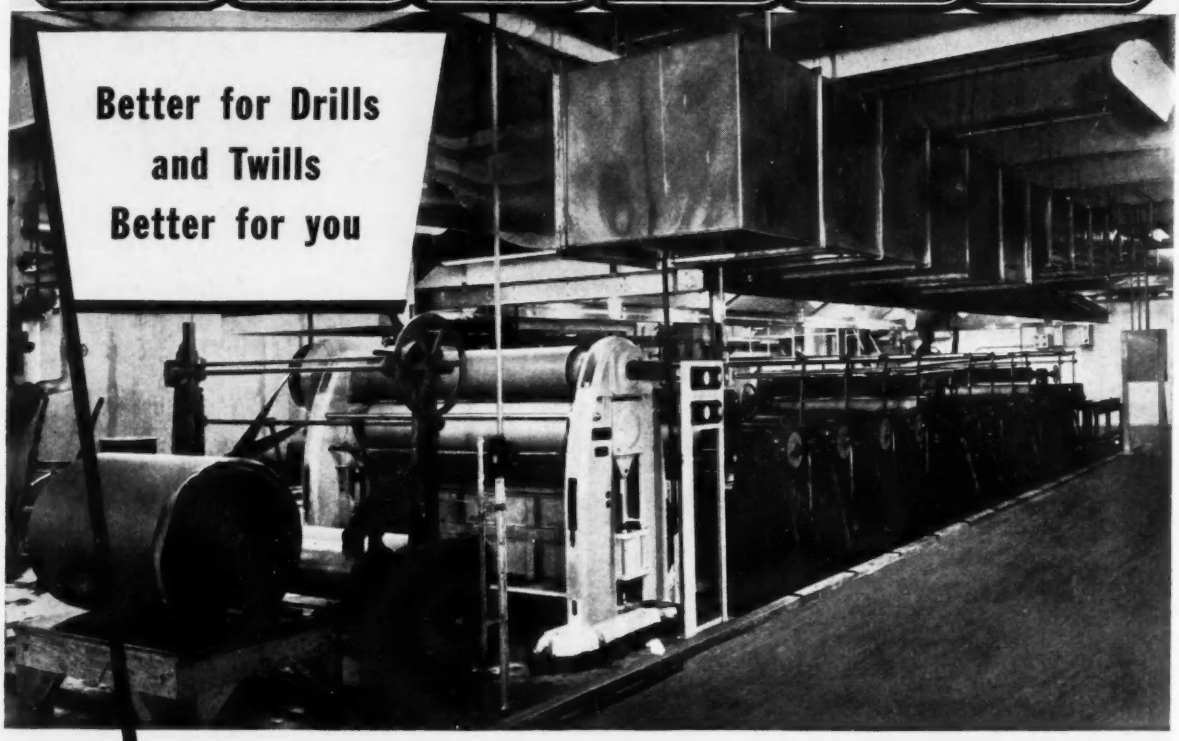

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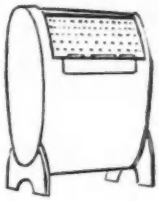

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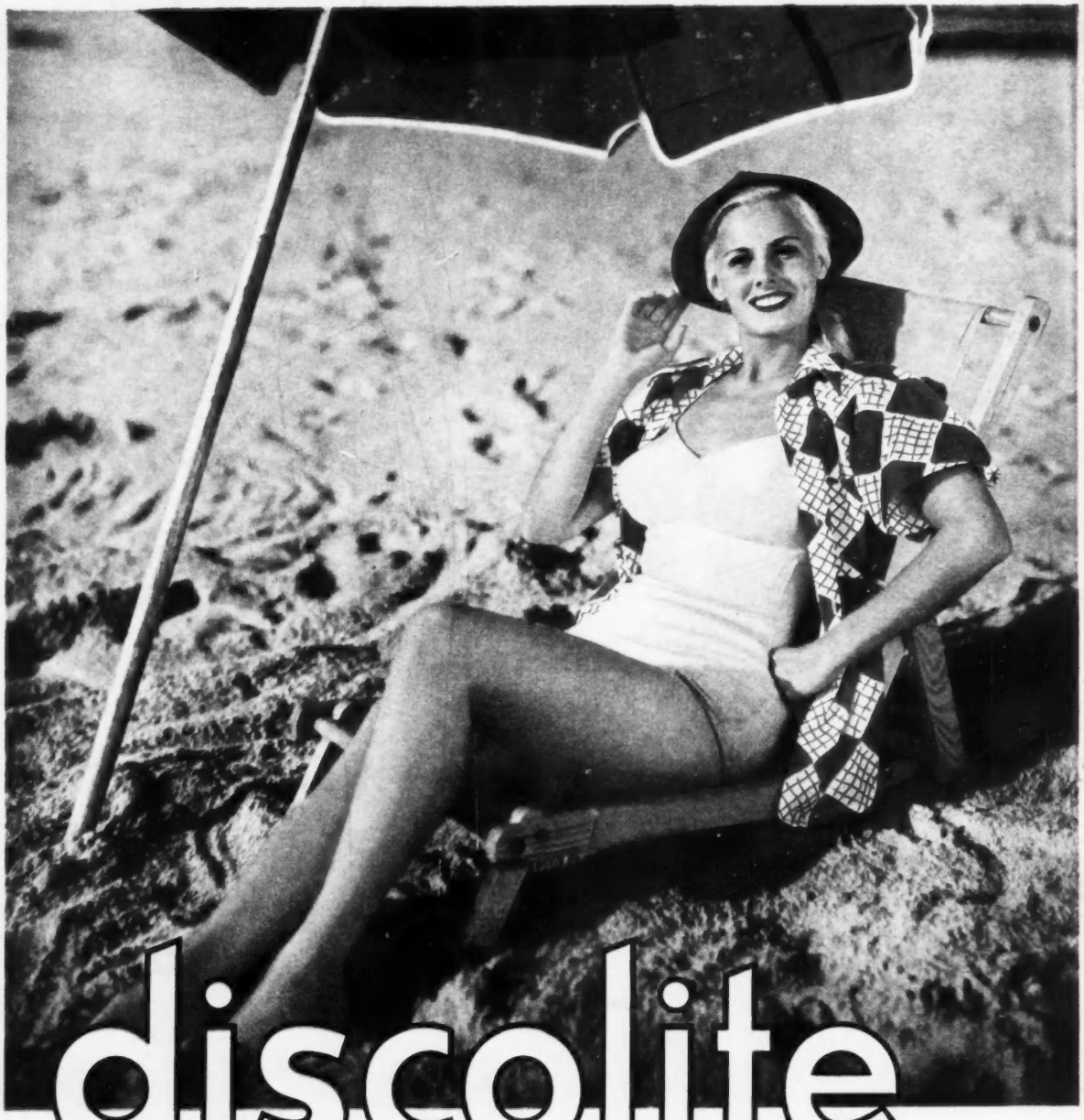

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